

A-19 MLRS

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

PROGRAM: MLRS Rocket System

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Launcher: M270 Multiple Launch Rocket System (MLRS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
PROGRAM EXECUTIVE OFFICE COL. STEVEN W. FLOHR
TACTICAL MISSILES Assigned: July 6, 1995
ATTN: SFAE-MSL-ML AV 746-1195 COMM (205) 876-1195
RSA, AL 35898-5700

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

RDT&E:
PE 63778A Project D050, D054, D027
PE 64314A Project D564

PROCUREMENT:
APPN 2032 ICN C65400 (Army)
APPN 2032 ICN C66400 (Army)
APPN 2032 ICN CAO257 (Army)

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

MILCON:

PE 00000445, 00000446, 00000447, 00000448, 00000763

5. (U) Related Programs:

M77 Munitions, Bradley Fighting Vehicle (BFV), TACFIRE, 10-Ton Truck/Trailer, Scatterable Mine Warhead (German Development), Field Artillery Meteorological Data System, Test Set AN/USM-410, Army Tactical Missile System (Army TACMS) and Advanced Field Artillery Tactical Data System (AFATDS).

6. (U) Mission and Description:

(U) The MLRS is a Multiple Launch Rocket System designed to supplement cannon weapons available to U.S. Division and Corps Commanders for the delivery of a large volume of firepower in a very short time against critical, time sensitive targets. The MLRS Launcher fires both a dual-purpose improved Conventional Submunition Warhead on the M77 Rocket and an improved Conventional Submunition Warhead on the Army TACMS. It provides an all-weather, indirect fire capability both at midrange and at depth to attack the enemy's indirect fire weapons, air defense systems, and Light Materiel and personnel targets in sufficient quantities and density to saturate available cannon weapon fire support. The system has the growth potential to adapt follow-on warheads such as Terminal Homing Munitions, Scatterable Antitank Mines, and smart submunitions to be fired on rockets, ballistic missiles and cruise missiles.

(U) The system consists of a M270 launcher, two disposable pods containing six rockets each, a Fire Control System, and an Azimuth Position Reference Unit. The M270 launcher is also the launch platform for the Army TACMS missile. The carrier is a derivative of the BFV which uses the same engine, transmission, and other mechanical systems. The MLRS carrier is designated M993. The rockets/missiles are loaded in the launch pods at the factory. They are shipped, stored in the pods and fired from the pods. Fuze settings are accomplished automatically by the Fire Control System.

(U) The system is designed for quick reaction with the capability of firing the first round within minutes of receipt of a fire mission and firing the complete load of 12 rounds in 60 seconds. MLRS will fill a firepower gap and be used to replace the eight-inch howitzer as a result of obsolescence and downsizing of the Army.

(U) The Improved Fire Control System (IFCS) will correct present and future supportability problems in the current MLRS Fire Control System resulting from electronic component obsolescence in the existing design. This effort will result in reduced operation

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

and support costs and will provide growth capabilities for existing and future MLRS Family of Munitions (MPOM) weapon systems. The Extended Range-MLRS (ER-MLRS) rocket will enhance the capability of the existing MLRS by providing improvements in range, accuracy, effectiveness, and maneuver force safety (improved submunitions with self destruct fuze). The improved launcher will have the capability to support ATACMS Block IA and Block II. The Improved Launcher Mechanical System (ILMS) will decrease the stow to aim point timeline, enhance effectiveness in engaging and supporting the force, and increase MLRS platform survivability.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
The Department Of The Army (DA) approved a Letter Of Agreement (LOA) for MLRS in September 1975. In January 1977, the Defense System Acquisition Review Council I (DSARC I) approved MLRS to enter validation with two competitive contractors and an option to later enter Maturation/Low Rate Production (LRP) with either one or two primes. In September 1977 Boeing, Seattle and Vought, Dallas were awarded competitive Validation Contracts for a period of 29 months which was later extended to a 32-month effort for incorporation of design changes to satisfy the German requirement for a Scatterable Mine Warhead. In July 1979, a Memorandum Of Understanding (MOU) on a Cooperative Program was signed by France, Germany, United Kingdom, and the United States. In 1982, Italy was admitted as an associate member of the Basic MLRS Program. The Validation Phase of the program was successfully completed on schedule, within cost, and within Decision Coordinating Paper (DCP) Development Test (DT)/Operational Test (OT) thresholds. The DSARC III held in May 1980 gave approval for MLRS to proceed into maturation, LRP, and initial production facilitization with a Full-Scale Production decision in March 1983. The Terminal Guidance Warhead program was initiated with approval of a LOA in October 1980.

(U) A General Officer Program Review (GOPR) conducted in March 1983 led to a Full-Scale Production decision in March 1983. MLRS was type classified standard in April 1983. The Initial Operational Capability (IOC) MLRS Battery was fielded in March 1983 at Fort Riley, KS. The first overseas unit was deployed to Europe September 1983 in Baumholder, Germany. The first multiyear contract was awarded in September 1983 to LTV Aerospace and Defense Company (LTVAD) to cover a 5-year firm fixed price contract with an Economic Price Adjustment Clause with a negotiated two-year option (FY88/FY89). The second multiyear procurement contract was awarded 30 June 1989 for a 5-year period (FY89-FY93).

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7a. (U) Program Highlights (Cont'd):

(U) MLRS performed extremely well in Operation Desert Storm (ODS), when significant numbers of MLRS Launchers were deployed. All operational requirements were met and, in most cases, exceeded for readiness, reliability, accuracy and maintainability. MLRS units from other coalition members were also involved in ODS and proved the value of the successful operation of this multi-national system. The newly upgraded MLRS (Deep Attack Launcher) demonstrated its enormous capability during first operational firing of the longer range Army TACMS. The 500th MLRS production launcher rolled out in February 1991.

(U) Second source qualification status was awarded to the European production line in February 1992. IFCS and ER-MLRS entered Engineering/Manufacturing Development (EMD) in 1992. EMD contracts were awarded to Loral Vought Systems (LVS). IFCS will mitigate electronic obsolescence, reduce operation and sustainment (O&S) burden, accommodate needs of present weapon systems under development and provide growth for future weapon systems which will use the MLRS M270 launcher platforms. All IFCS Design Reviews were successfully conducted on schedule.

(U) The need for ER-MLRS was identified in Lessons Learned from ODS. The ER-MLRS, a successor to the basic M26 rocket, will provide increased range, improved accuracy, lower dud rates, and has potential to provide a low cost delivery vehicle for future smart munitions at extended ranges. The ER-MLRS rocket program began flight testing in May 1994. Twelve rockets were successfully tested in the May-June 1994 timeframe.

(U) A bilateral MOU between Japan and the United States for Japanese production of MLRS was signed January 4, 1993. (Japanese production is scheduled to begin in 1996.) Japan is procuring at least 36 launchers and a quantity of tactical and practice rockets over the next four years under Foreign Military Sales.

(U) A Value Engineering Change Proposal (VECP) was used to prove the concept of the Reduced Range Practice Rocket (RRPR). The RRPR, known as M28A1, went into production in July 1993.

(U) The first tactical fielding of the Fire Direction Data Manager (FDDM) took place in September 1993.

(U) The M270 Family of Munitions Command and Control/Fire Direction Data Manager (MFOM/FDDM) Product Office completed its support and chartered mission in June 1994.

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7a. (U) Program Highlights (Cont'd):

(U) The first completely tactical MLRS AT-2 multinational flight test was successfully conducted in October 1994 at White Sands Missile Range (WSMR), NM.

(U) Congress authorized the Army to initiate the ILMS program in FY95 in order to recognize savings by synchronizing ILMS retrofit schedule with the IFCS.

b. (U) Significant Developments Since Last Report --
The first Improved Fire Control System Engineering Design Test (EDT) Line Replaceable Unit was delivered in March 1995. The first two full sets of EDT hardware were delivered in November 1995. Laboratory testing indicates all subsystems meet technical performance requirements. Low level hardware and software integration were successful. Engineering releases were completed for all Computer Software Configuration Items.

(U) Six Extended Range-Multiple Launch Rocket System rocket pods were flight tested at the French CEM test range in January 1995. Lone Star Army Ammunition Plant, Texarkana TX, successfully completed the self destruct fuze process validation in September 1995. In December 1995 322 submunitions were flown at White Sands Missile Range; 316 were recovered with only three failures. A success rate of 99.05 percent was achieved which meets the operational requirement.

(U) The Improved Launcher Mechanical System Request for Proposal was released in March 1995. A Preliminary Design Review of the Power Take-Off Unit was successfully completed at United Defense Limited Partnership in May 1995. Milestone II Decision approval was received in July 1995 and an Engineering and Manufacturing Development contract was awarded in August 1995.

(U) The MLRS is expected to satisfy mission requirements.

(U) It is anticipated that this will be the final Selected Acquisition Report (SAR) for the M270 MLRS weapon system. Ninety percent of production deliveries have been achieved. This final report will not be used for unit cost reporting purposes. Included in this final SAR are stand alone schedule parameters for each program.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline of June 17, 1993. There are no Nunn-McCurdy unit cost

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

breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I	JAN 77	N/A	JAN 77
Validation Contract Award	SEP 77	N/A	SEP 77
Development Test/Operational Test I (Government)			
Start	NOV 79	N/A	NOV 79
Complete	FEB 80	N/A	FEB 80
Milestone IIIA	MAY 80	N/A	MAY 80
Initial Production Delivery-Rckt	JAN 82	N/A	MAY 82
Initial Production Delivery-Lnchr	FEB 82	N/A	SEP 82
Operational Test III			
Start	JUN 82	N/A	OCT 82
Complete	SEP 82	N/A	MAR 83
Milestone IIIB	N/A	N/A	MAR 83
IOC	NOV 82	N/A	MAR 83
First Unit Equipped (FUE)			
USAREUR	N/A	N/A	AUG 83
USACEGE	N/A	MAR 86	MAR 86
FORSCOM	N/A	MAR 83	MAR 83
EUSA	N/A	JUN 84	JUN 84
TRADOC	N/A	FEB 83	FEB 83
ARNG	N/A	SEP 89	SEP 89
AVMRL First Delivery			
FY93	N/A	AUG 94	DEC 92
Full-Scale Prod Contr Award (MYP I/FY83-89)	N/A	SEP 83	SEP 83
MYP I Option III Award	N/A	DEC 87	DEC 87
MYP I Option IV Award	N/A	NOV 88	NOV 88
First Delivery MYP I	N/A	FEB 85	FEB 85
MYP I Option III	N/A	JUN 89	JUN 89
Full-Scale Prod Contr Award (MYP II/FY89-94)	N/A	JUN 89	JUN 89
MYP II PY1 Award	N/A	JUN 89	JUN 89
MYP II PY2 Award	N/A	DEC 89	DEC 89
First Delivery MYP-I Option III	N/A	N/A	JUN 89
MYP II PY3 Award	N/A	OCT 90	DEC 90
MYP II PY4 Award	N/A	OCT 91	NOV 91
MYP II PY5 Award	N/A	OCT 92	DEC 92

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

(U) Milestones (Cont'd) --	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
First Delivery MYP II			
MYP II PY1	N/A	DEC 90	NOV 90
MYP II PY2	N/A	APR 91	APR 91
MYP II PY3	N/A	APR 92	MAY 92
MYP II PY4	N/A	APR 93	FEB 93
MYP II PY5	N/A	APR 94	MAY 94

Improved Fire Control System (IFCS)			
PEO In-Process Review	N/A	AUG 92	AUG 92
Milestone II	N/A	SEP 92	SEP 92
Development Contract Award	N/A	SEP 92	SEP 92
PDR Complete	N/A	NOV 93	FEB 94
CDR Complete	N/A	JUL 94	JUL 94
DT&E			
Start	N/A	JAN 95	JAN 95
Complete	N/A	JAN 97	JAN 97
IOT&E			
Start	N/A	JAN 97	JAN 97
Complete	N/A	JUL 97	JUL 97

EXTENDED RANGE ROCKET (ER-MLRS)			
PEO-IPR (MSII)	N/A	NOV 92	NOV 92
EMD Contract Award	N/A	DEC 92	DEC 92
PDR Complete	N/A	JUL 93	JUL 93
CDR Complete	N/A	FEB 95	DEC 94
PPQT			
Start	N/A	OCT 96	JAN 96 (Ch-1)
Complete	N/A	FEB 97	APR 96 (Ch-1)
PQT			
Start	N/A	JUL 98	FEB 98 (Ch-1)
Complete	N/A	SEP 98	APR 98 (Ch-1)

b. (U) Previous Change Explanations --

The schedule variances for milestone Initial Production Delivery through IOC are due to the FMC strike which resulted in a four month slip in the MLRS program schedule. ASARC IIIB was downgraded to a General Officer Program Review (GOPR) by the Army. The GOPR approved MLRS to enter Full Scale Production at Milestone IIIB.

Delay in Multiyear II contract award (from March 1989 to June 1989) was due to change in requirements, quantity increases, and

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

difficulty encountered with finalization of contract negotiations.

MYP-II Program Year (PY) 4 and PY5 Awards changed from October 1991 and October 1992 as reflected in the SAE Approved Program Baseline, dated February 26, 1990 to November 1991 and November 1992, respectively, to reflect a more realistic estimate of contract awards based on fund availability.

MYP-II PY3 Award changed from November 1990 to December 1990 and MYP-II PY1 changed from December 1990 to November 1990 to reflect award and start of deliveries.

First Delivery MYP-II PY3 changed from April 1992 to May 1992, First Delivery MYP-II PY4 changed from April 1993 to February 1993 and First Delivery MYP-II PY5 changed from April 1994 to February 1994 to reflect contract definitization September 30, 1991.

MYP-II PY5 Award date was changed from November 1992 to December 1992 to reflect date of award. First Delivery MYP-II PY5 date was changed from February 1994 to May 1994 due to conversion of planned tactical rockets to practice rockets. Both the IFCS and ER-MLRS successfully completed In Process Reviews in 1992 and received Milestone II approval to enter EMD. These are the initial entries for ER-MLRS.

The IFCS PDR Complete date was rescheduled from November 1993 to February 1994 as a result of impacts caused by late contract award due to acquisition process leadtime and delayed definitization until October 1993.

The ER-MLRS CDR Complete date Current Estimate changed from February 1995 to December 1994 to reflect actual completion of the review.

c. (U) Current Change Explanations --

(Ch-1) PPQT Start Date Current Estimate changed from October 1996 to January 1996, PPQT Complete Date Current Estimate changed from February 1997 to April 1996, PQT Start Date Current Estimate changed from July 1998 to February 1998, PQT Complete Date Current Estimate changed from September 1998 to April 1998, as a result of acceleration of ER-MLRS program.

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

d. (U) References --

(U) Planning Estimate:

DCP Number 165, dated May 15, 1979.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated June 17, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --

<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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Technical Development
Characteristics
Technical

(b)(1)

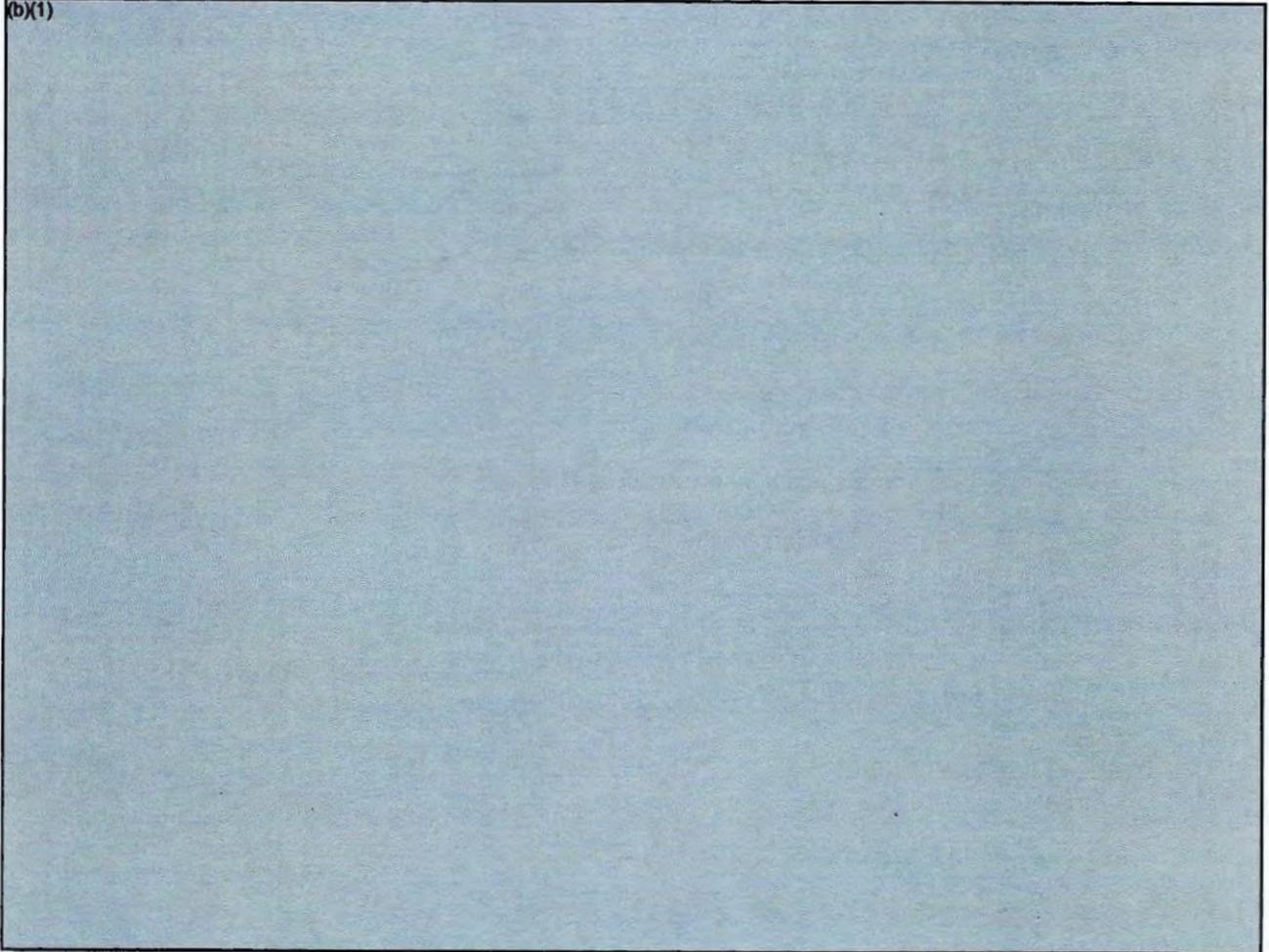
(b)(1)

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

Approved

Demon-

(b)(1)



Under Production Hardware Characteristics:

Rocket Fly-to-Buy (FTB) reliability was based on production contract rocket FTB Acceptance Requirements. FTB was performed on each lot of rockets (1 month production, but not more than 500 Rocket Pods).

Accuracy numbers were based on precision error standard deviation of a ripple firing of six rockets.

Armored Vehicle Multiple Rocket Launcher (AVMRL) PRAT numbers were based on production contract launcher PRAT Acceptance Requirements.

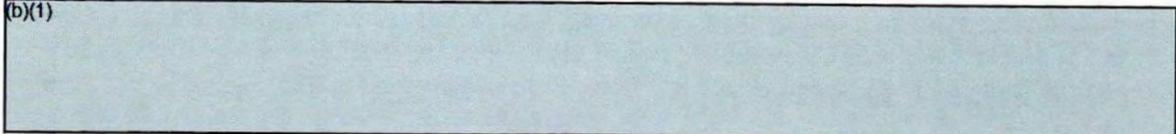
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10b. ~~(S)~~ Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

- (1) (U) Maximum range decrease of 3km (35km to 31.8km) meets the system threshold. It is not cost effective to go from 32km to 35km because 16.5% of the munitions must be given up to reach only 1.9% more targets

(b)(1)



c. (U) Current Change Explanations --

(Ch-1) Rockets Fly-to-Buy Reliability Current Estimate changed from .97 to .98, due to recent testing.

d. (U) References --

(U) Planning Estimate:

DCP Number 165, dated May 15, 1979.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated June 17, 1993.

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

a. (U) Cost --	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	261.0	367.2	397.8
Procurement	1971.3	3048.1	2813.4
M77	(1624.6)		(1560.2)
Practice Rounds	(97.9)		(193.3)
Launchers	(118.9)		(940.0)
Total Flyaway	(1841.4)		(2693.5)
Other Wpn Sys	(123.0)		(21.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(6.9)		(98.4)
Construction (MILCON)	0.0	52.8	53.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 78 Base-Year \$	2232.3	3468.1	3264.7

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

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1221.7	4001.9	3538.1
Development (RDT&E)	(39.2)	(187.7)	(229.6)
Procurement	(1182.5)	(3779.6)	(3274.6)
Construction (MILCON)	(0.0)	(34.6)	(33.9)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	3454.0	7470.0	6802.8

b. (U) Quantity --

Development (RDT&E)	10	10	10
Procurement	<u>173</u>	<u>918</u>	<u>754</u>
Total	183	928	764

Note: Excludes 10 RDT&E prototypes from the SAR
Baseline that are not considered fully configured.

Current Estimate includes procurement of 488,742 Tactical Rockets
and 72,132 Practice Rockets.

c. (U) Foreign Military Sales/International Cooperative Programs --
Foreign Military Sales to date:

COUNTRY	LAUNCHER QTY	FUNDS
Bahrain	9	\$ 48.3M
Greece	18	113.2M
Israel	48**	308.9M
Italy	2	11.0M
Netherlands	22	173.8M
United Kingdom	4	13.2M
Turkey	12	46.3M
France	2	6.0M
Germany	6	43.0M
Japan	36*	43.1M
Norway	12	79.6M
Denmark	8	52.7M
Other Support Costs		18.8M

TOTAL		\$957.9M

*Japan's launchers were purchased commercially from contractor.
Costs are for rockets and engineering services.

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

** Twelve Launchers delivered as of December 1995. Twelve to be delivered in FY97,98,99.

NOTE: Other Support Costs includes NAMSA funding for engineering services.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:
DCP Number 165, dated May 15, 1979.

(U) Approved Program:
AAE Approved Acquisition Program Baseline dated June 17, 1993.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY78\$)	3264.7	3468.1	
(2) Quantity	764	928	
(3) Unit Cost	4.273	3.737	14.34
b. (U) Procurement			
(1) Cost (BY78\$)	2813.4	3048.1	
(2) Quantity	754	918	
(3) Unit Cost	3.731	3.320	12.38

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	300.2	3153.8	0.0	3454.0
Previous Changes:				
Economic	+17.8	+597.8	-10.7	+604.9
Quantity	-	+1570.0	-	+1570.0
Schedule	-	+24.1	-	+24.1
Engineering	+289.2	+216.1	-	+505.3
Estimating	+6.0	+433.0	+98.1	+537.1
Other	+9.5	+9.1	-	+18.6
Support	-	+53.8	-	+53.8
Subtotal	+322.5	+2903.9	+87.4	+3313.8
Current Changes:				
Economic	-6.2	-35.2	0.4	-41.0
Quantity	-	7.3	-	+7.3
Schedule	-	-4.1	-	-4.1
Engineering	-	-	-	-
Estimating	10.9	62.1	-0.4	+72.6
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	+4.7	+30.3	-	+35.0
Total Changes	+327.2	+2934.2	+87.4	+3348.8
Current Estimate	627.4	6088.0	87.4	6802.8

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

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	261.0	1971.3	0.0	2232.3
Previous Changes:				
Quantity	-	+674.2	-	+674.2
Schedule	-	-27.5	-	-27.5
Engineering	+126.8	+71.4	-	+198.2
Estimating	+1.6	+101.7	+53.6	+156.9
Other	+3.5	+6.5	-	+10.0
Support	-	-10.2	-	-10.2
Subtotal	+131.9	+816.1	+53.6	+1001.6
Current Changes:				
Quantity	-	2.4	-	+2.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.9	23.4	-0.1	+28.2
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	+4.9	+26.0	-0.1	+30.8
Total Changes	+136.8	+842.1	+53.5	+1032.4
Current Estimate	397.8	2813.4	53.5	3264.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Engineering: New RDT&E effort for IFCS. Initial funding of ER-MLRS. Additional funding of IFCS. New RDT&E effort for ILMS.

Estimating: Increase in cost based on Validation Phase (VP) program; deletion of RDT&E effort funded by MOU contribution; adjustment in prior year escalation and deletion of anticipated reprogramming. Residual RDT&E requirements resulting from operational testing and development of program sets for system automatic test equipment.

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

Conversion of prior base-year dollars to then-year and cost growth on finalization of R&D contract. Decrease in the estimate for IFCS. Adjustment for current and prior inflation. Adjustment resulting from OSD "set aside". Increase in funding for IFCS during FY94-97. Decrease in the estimate for ER-MLRS during FY93-97. Adjustment for current and prior inflation.

Other: 11-week strike at FMC resulting in a 4-month slip in the program schedule.

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Changes in the originally approved MLRS force structure planning estimate of 183 launchers are an additional 667 launchers, 154,278 tactical rockets, and 22,770 practice rockets. Additional changes resulted from a reduction of the total program of 7 launchers, 60,000 tactical and 16,776 practice rockets. Increase of 20,286 tactical rockets in FY91 to replace assets used in Operation Desert Storm. Increase in FY91 of 3714 tactical rockets and 5592 practice rockets and decrease of 14 launchers. Increase in FY92 of 99 launchers and 23,760 practice rockets. Decrease in FY92 of 2250 tactical rockets. Reduction in FY93 of 184 launchers and 462 tactical rockets. Increase of 20 National Guard launchers. Total launchers increased from 734 to 754. Increase in funding to procure 10344 ER-MLRS rockets in FY95-01. Increase of practice rockets from 62994 to 72132 in FY94-95.

Schedule: Restoration of production rate. Establishment of a multiyear procurement. Cost savings associated with decrease in procurement buys for launchers. Cost increase in FY92 resulting from the stretch-out of launcher procurement schedule. Additional cost increase due to the change in tactical rounds procurement schedule.

Engineering: Procurement costs associated with the ER-MLRS. Additional funding to procure 10344 ER-MLRS rockets in FY95-01. Product Improvement to the configuration of the tactical rocket.

Estimating: Revised round and launcher cost based on VP program. Revised cost estimate for maturation phase changes to Low Rate Production hardware. Adjustment in prior year escalation; deletion of

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

anticipated reprogramming. Increase in base-year dollars; realignment of advanced materials funding. Estimate associated with quantity changes and reduction of administrative services; reduction in cost of submunitions and revised Economic Price Adjustment forecast multiyear contract. Additional funds for competition-quantity. Expanded MLRS force structure. Variance between actual cost and baseline cost of additional launchers. The overall decrease in production quantities resulted in production and overhead inefficiencies. Increase production and overhead cost resulting from the increase of 20,286 tactical rockets. Correction of prior SAR variances to reconcile Flyaway and Support. Increased cost due to shut down of Bradley line in FY 94. Increased cost due to lower launcher production rates in FY 94-97. Revised estimate due to rocket production termination in FY 93. Adjustment for current & prior inflation. Increase in carrier unit cost (FY93-FY94) due to going from MYP to single-year production for Bradley and MLRS launchers. Reduced estimate in launcher funding in FY94 to maintain a warm production base. Additional funding in FY95 and FY96 associated with fielding of previously procured launchers. Decrease due to cancellation of warm line rocket funding in FY95-99. Initial funding for start of ER-MLRS in FY99. Transfer in funding for tactical rocket line to practice rocket line in FY94. Decreased funding to launcher line due to reprogramming in FY94 to rocket line, and mod line. Additional funding for 20 launchers for National Guard. Additional funding in FY95-96 for fielding of previously procured launchers.

Other: Eleven-week strike at FMC resulting in a four-month slip in the program schedule.

Support: Refinement of funding requirement for initial spares. Additional spares required to support expanded force structure. Initial spares in FY91 and FY92 were purchased with Army Stock Fund. Support requirements extended three years. Funding for Payroll, Travel, Contracts, Total Package Fielding, New Equipment Training, and First Destination Transportation for FY92-97 changed from OMA to MIPA funding. Correction of prior SAR variances to reconcile flyaway and support.

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MLRS Rocket System, December 31, 1995

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

Revised estimate of initial spares costs.
 Adjustment for current and prior inflation.
 Transfer of consumable spares from initial spares line to launcher line. Increased other weapon system cost to support launcher and ER-MLRS.
 Reduced Initial Spares requirements associated with quantity decrease. Decrease in data requirements associated with decrease in launcher quantities. Reduced Initial Spares requirement.
 Increase in data requirements associated with increase of 20 National Guard Launchers.
 Adjustment for current and prior inflation.

MILCON

Economic: Revised escalation indices.
Estimating: Addition of MILCON funding requirements to SAR, revised estimate and increase in construction requirements. Refinement of MILCON requirements. Historically MIPA indices had been used to calculate these values, however; MILCON indices were used this year to make proper adjustments. Additional funding in FY 91 of \$1.9M. Adjustment for current and prior inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-6.2
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+3.4
Realignment of program estimate to include ILMS, IFCS, and ER-MLRS. (Estimating)	+3.4	+7.5
RDT&E Subtotal	<u>+4.9</u>	<u>+4.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-34.3
Economic adjustment for negative program change. (Economic)	N/A	-0.9
Adjustment for Current and Prior Inflation. (Estimating)	+6.6	+16.9

MLRS Rocket System, December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity Variance resulting from increase of 372 ER-MLRS rockets from 10344 to 10716. (Quantity)	+2.8	+8.4
Quantity Variance resulting from decrease of 192 Practice Rockets from 72132 to 71940. (Quantity)	-0.4	-1.1
Acceleration of annual procurement buy profile related to ER-MLRS rockets quantity increase. (Schedule)	--	-4.1
Increased funding for rebuild of 29 National Guard launchers in FY96. (Estimating)	+17.0	+45.4
Revised estimate in total funding for ER-MLRS. (Estimating)	-0.6	-1.3
Revised estimate to reflect actual Practice Rockets procured. (Estimating)	+0.4	+1.1
Revised estimate, for Initial Spares, and Other Weapon System support. (Support)	+0.2	+0.2
 Procurement Subtotal	<u>+26.0</u>	<u>+30.3</u>
 (3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.4
 MILCON Subtotal	<u>-0.1</u>	<u>--</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
18.87	0.74	-12.29	0.03	0.66	0.80	0.02	0.07	-9.97	8.90

MLRS Rocket System, December 31, 1995

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

a. (U) RDT&E --			Initial Contract Price		
(U) <u>IFCS DEVELOPMENT:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LVS, DALLAS, TX					
DAAH01-92-C-0432, CPIF			\$134.0	N/A	0
Award: September 28, 1992					
Definitized: October 29, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$130.5	N/A	0	\$143.8	\$144.0	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (01/29/96)			\$-1.3	\$-2.5	
Net Change			\$-8.4	\$-1.7	
			\$-7.1	\$0.8	

Explanation of Change:

The net change in cost and schedule variances are due to design changes that resulted from the System Design Review (SDR) and availability of critical electronic components.

b. (U) Procurement --			Initial Contract Price		
(U) <u>LAUNCHER MYII (Launcher):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LTVAD, DALLAS, TX					
DAAH01-89-C-0336, FFP/EPA			\$942.0	N/A	235
Award: June 1, 1989					
Definitized: June 30, 1989					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1121.3	N/A	284	\$1121.3	\$1129.2	

Explanation of Change:

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

Information is as of December 31, 1994. The above contract values represent a five-year multiyear acquisition. Details by year are as follows:

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MLRS Rocket System, December 31, 1995

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

Initial Contract Price (\$M).

FFP	Quantity	Launcher/Tactical/Practice
MYP-1	\$176.2	62/17,490/570
MYP-2	\$198.7	41/24,000/120
MYP-3	\$210.6	44/24,000/1,878
MYP-4	\$174.0	44/24,000/5,592
MYP-5	\$182.5	44/24,000/5,592

Current Contract Price (\$M)

FFP	Quantity	
(Includes only Army funds)	Launcher/Tactical/Practice (Includes only Army quantities)	
MYP-1	\$178.4	Same as initial
MYP-2	\$208.3	Same as initial
MYP-2-OPT	\$127.7	27/16,788/3,756
MYP-3	\$211.4	Same as initial
MYP-3-OPT	\$97.9	22/12,000/0*
MYP-4	\$167.6*	44/20,286/9306
MYP-5	\$130.0*	44/270/20,046

*--The changes to MYP-3,4, and 5 were due primarily to VECP, waivers, and EPA adjustments. The decrease in MYP-5 is a result of the additional conversion of tactical rockets to FMS requirements, as well as the above.

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

a. (U) Program Status --

- (1) Percent Program Completed: 80.8% (21 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 95.1% (\$6470.2 / \$6802.8)

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MLRS Rocket System, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY76-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	477.6	70.9	64.3	14.6	627.4
Procurement	5689.5	144.8	62.5	191.2	6088.0
MILCON	87.4	-	-	-	87.4
O&M	-	-	-	-	-
Total	6254.5	215.7	126.8	205.8	6802.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY78 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

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

1976				1.1	1.0	1.0	1.0	7.5
1977				0.4	0.4	0.4	0.4	1.6
1977				7.2	6.9	6.9	6.9	6.4
1978				44.3	46.4	46.4	46.4	7.1
1979				61.3	70.9	70.9	70.9	9.1
1980				53.3	67.8	67.8	67.8	10.6
1981				50.5	70.0	70.0	70.0	10.6
1982				27.2	40.0	40.0	40.0	7.6
1983				17.0	25.9	25.9	25.9	4.0

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MLRS Rocket System, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1984				2.0	3.2	3.2	3.2	3.8
1985				1.1	1.8	1.8	1.8	3.4
1986								
1987								
1988								
1989								
1990								
1991								
1992				9.8	20.2	20.2	20.2	3.0
1993				11.2	23.6	23.6	23.1	2.4
1994				19.4	41.7	41.7	41.3	2.0
1995				26.3	57.8	57.8	54.1	1.9
1996				31.5	70.9	32.3	6.4	2.0
1997				28.0	64.3			2.2
1998				6.2	14.6			2.2
Subtot	10			397.8	627.4	509.9	479.4	

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MLRS Rocket System, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2032 Missile Procurement, Army

1980	12	14.7	30.6	46.5	67.0	65.3	65.2	11.5
1981	32	15.9	55.7	73.3	117.8	113.7	113.6	11.6
1982	68	10.0	90.1	112.4	197.1	171.7	170.4	14.3
1983	72	11.6	205.3	239.1	443.5	419.3	417.9	8.9
1984	76		270.1	281.7	533.8	508.8	508.8	7.1
1985	44		248.8	261.7	514.0	484.7	485.0	3.4
1986	44		229.7	230.8	468.9	468.3	468.8	2.8
1987	44		205.6	212.6	449.5	441.6	441.6	2.7
1988	24		180.9	191.6	419.2	404.8	401.8	3.0
1989	62		187.0	198.8	455.7	430.0	425.8	4.2
1990	68		213.1	218.4	516.7	512.0	507.9	4.1
1991	66		252.6	253.4	613.9	613.9	613.9	4.3
1992	44		72.8	73.6	182.4	182.4	178.5	3.0
1993	44		99.5	107.2	270.9	255.1	238.9	2.4
1994	34		95.5	100.8	259.5	230.9	101.6	2.0
1995	20		62.8	68.2	179.6	73.1	19.7	1.9
1996			52.3	54.2	144.8	4.8	0.5	2.0
1997			22.8	22.9	62.5			2.2

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MLRS Rocket System, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

1998			15.8	15.8	44.3			2.2
1999			16.6	16.6	47.3			2.3
2000			16.1	16.1	46.9			2.2
2001			17.6	17.7	52.7			2.2
Subtot	754	52.2	2641.3	2813.4	6088.0	5380.4	5159.9	

NOTE: Recurring flyaway dollars with no quantities in FY96-01 are for procurement of ER-MLRS rockets and, in FY96-97, for fielding of previously procured launchers.

Appropriation: 2050 Military Construction, Army

1982				10.7	16.4	16.4	16.4	7.6
1983				16.7	26.4	26.4	26.4	4.0
1984				11.3	18.5	18.5	18.5	3.8
1985				5.6	9.4	9.4	9.4	3.4
1986				6.4	11.1	11.1	11.1	2.8
1987								
1988								
1989				1.9	3.7	3.7	3.7	4.2
1990								

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MLRS Rocket System, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2050 Military Construction, Army (Cont'd)

1991				0.9	1.9	1.9	1.9	4.3
Subtot				53.5	87.4	87.4	87.4	
Grand Total	764	52.2	2641.3	3264.7	6802.8	5977.7	5726.7	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

		<u>Plan/Actual</u>	
		10/10	
		700/700	
		Plan	Actual
RDT&E	Rockets	504	470
PROCUREMENT	Tactical Rockets	477396	477396
	Practice Rockets	66006	67242
	Launcher	700	700

Note: These total deliveries are as of December 31, 1995.

b. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)			
	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 393 - @ Peak Rate: 10.0/mo			
FY 80 Base-Year \$	1.200	1.200	1.500
Then Year \$	2.000	2.000	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 80 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

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17b. (U) Production Rate Data (Cont'd):

	TACTICAL	PRACTICE	LAUNCHER
M77 Rounds Qty. Totals:	362,832	27,638	393
Peak Rates:	6,000	330	10
	APPROVED PROGRAM	CURRENT ESTIMATE	THRESHOLD
M77 Rounds			
Constant FY80\$:	.004	.004	.007
Then-Year \$:	.008	.007	
Practice Rounds:			
Constant FY80\$:	.003	.003	
Then-Year \$:	.005	.006	
Launcher			
Constant FY80\$:	1.249	1.578	1.499
Then-Year \$:	1.980	2.976	

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The unit for tracking O&S costs is a firing battery. The O&S costs are estimated in an annual Program Office Estimate (POE) (Latest validation Sep 94) update. The POE updates operating tempo, reliability/maintainability, maintenance concept, manning and logistics policies. This POE information is integrated into the annual update of the MLRS O&S Cost Reduction Program and provides the methodology to portray the O&S costs per battery. A typical operating year is selected from the annual POE update and divided by the number of MLRS batteries deployed to give an O&S cost per battery. This typical operating year is a point in time after the completion of fielding, when the operating and support costs are neither increasing nor decreasing in magnitude due to fielding changes. There is no antecedent program for MLRS.

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MLRS Rocket System, December 31, 1995

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

b. (U) Costs -- (FY 1978 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Firing Battery	Avg Annual Cost Per Antecedent
Firing Battery	3.0	N/A
Total	3.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	0.7	---	---	---	0.7
Industrial Fund	9.9	---	---	---	9.9
Total	10.6	---	---	---	10.6

There was no Exhibit OP-18 for MLRS for the current SAR cycle.

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SELECTED ACQUISITION REPORT (NCS:DD-COMP(O&A)823)
PROGRAM: PATRIOT PAC-3

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Guided Missile System, Air Defense (PATRIOT) PAC-3 Program
2. (U) DoD Component: BMDO Joint Participants: The Department of the Army is the Executing Agency
3. (U) Responsible Office and Telephone Number:

Project Manager	COL Stephen J. Kuffner
Patriot Project Office	Assigned: July 27, 1995
Attn: SFAE-MD-PA	AV 645-3240 COMM (205) 955-3240
Redstone Ars., AL 35807-3801	

LTC Malcolm O'Neill
Assigned: February 1, 1993
AV 225-7060 COMM (703) 695-7060

Ballistic Missile Defense
Organization, The Pentagon
Washington, DC 20301-7100

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DATE: 03/13/96

PATRIOT PAC-3, December 31, 1995

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

RDTE&E:

PE 23801D036, 0603216C (Shared), 0604225C (Shared), 0604216C (Shared)
PE 0604865C, 0604866C

PROCUREMENT:

APPN 2032 ICN C50700 (Army)
APPN 2032 ICN CA0267 (Army)
APPN 0300 ICN 0208060C (DCA/DNA) (Shared)

5. (U) Related Programs:

THAAD System, CORPS SAM, Joint Tactical Ground Station (JTAGS)

6. (U) Mission and Description:

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

The PATRIOT Advanced Capability (PAC-3) program is the result of a series of integrated, phased system improvements in combination with the PAC-3 missile (formerly ERINT). The PAC-3 missile is a high velocity hit-to-kill, surface-to-air missile capable of intercepting and destroying tactical missiles and air breathing threats. The PAC-3 missile provides the range, accuracy, and lethality to effectively defend against tactical missiles with nuclear,

PATRIOT PAC-3, December 31, 1995

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

conventional high explosive, biological and chemical warheads. The missile uses a solid propellant rocket motor, aerodynamic vane controls, and inertial guidance to navigate to an intercept point. Shortly before arrival at the intercept point, the missile's rate of spin is increased, the on-board radar homing seeker acquires the target, and terminal homing guidance is initiated to achieve hit-to-kill by high resolution maneuvers.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The PATRIOT PAC-3 program is the evolution of the phased materiel change improvement program and new missile procurement to upgrade PATRIOT System performance. As a result of evolving threat and analysis of PATRIOT performance in Operation Desert Storm, several system upgrades are being implemented. These upgrades include the PAC-3 missile, radar enhancements, communications upgrades, and increased computer capability. In February 1994, the Army Systems Acquisition Review Committee (ASARC) made a down-select recommendation to proceed with development of the Extended Range Interceptor (ERINT) as the PAC-3 missile, in lieu of the Multimode missile. The Defense Acquisition Board (DAB) conducted a Milestone IV/II review on 19 May 94. The PAC-3 missile was approved for entry into the Engineering and Manufacturing Development (EMD) phase. The PAC-3 Missile Development contract was awarded to Loral Vought Systems on 26 October 1994, and the Missile Integration contract was awarded to Raytheon Company on 31 October 1994. The PAC-3 program is funded by both the Army and the Ballistic Missile Defense Organization (BMDO).

b. (U) Significant Developments Since Last Report --

The PAC-3 missile Preliminary Design Review (PDR) was successfully conducted in August 1995. The PDR examined missile and command and launch specifications, hardware and software functional allocations, major design trades, and risk assessments. The missile development effort was directed to proceed toward the Critical Design Review milestone in March 1996.

In September 1995, the Program Executive Officer for Missile Defense (PEO-MD) approved a limited procurement of six Radar Enhancement Phase III modification kits and associated spares. In December 1995, the PEO-MD authorized full production for up to sixty-nine additional Radar Enhancement modification kits and spares. The production decisions represent successful testing which demonstrated the Radar Enhancement Phase III development program objectives.

The Configuration 1 First Unit Equipped (FUE) was declared on 21 December 1995 with 2-7 Air Defense Artillery, at Fort Bliss, TX.

PATRIOT PAC-3, December 31, 1995

7b. (U) Program Highlights (Cont'd):

The Configuration 1 FUE also included materiel release of the Guidance Enhancement Missile. Configuration 1 enhances the PATRIOT system to improve overall system throughput and expandability as well as improve system performance against Tactical Ballistic Missile and Cruise Missile threats.

The PATRIOT PAC-3 System is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

Recent budgeting decisions caused significant replanning of the PAC-3 program. These budgeting decisions are being validated through BMDO program replanning. Therefore a current comprehensive BMDO program plan is not available for this December 1995 SAR.

The December 1995 SAR content, especially the program current estimate, reflects program information truncated at FY01, consistent with recent budgeting decisions. This SAR contains blanks or "To Be Determined" in place of outyear funding and therefore the current estimate only reflects totals through FY2001. Similarly, the schedule milestones only reflect estimates contained in recent budgeting decisions.

Truncation of program estimates creates artificially negative cost variances as shown in Section 13. Program totals and cost variances will significantly change once BMDO/Army complete and report on the new program estimate. BMDO plans to submit an exception SAR reflecting total program estimates to Congress in May, for the quarter ending March 31, 1996.

8. (U) Threshold Breaches:

There are schedule and cost threshold breaches to the approved Acquisition Program Baseline, dated 22 Feb 95. As part of the new estimate development for the PAC-3 program, a Program Deviation Report and proposed APB will be submitted.

There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>	
MISSILE				
Milestone II (Missile) (DAB)	MAY 94	MAY 94	MAY 94	
Development Contract Award	SEP 94	SEP 94	OCT 94	
Preliminary Design Review Complete	SEP 95	SEP 95	OCT 95	(Ch-1)
Critical Design Review Complete	MAR 96	MAR 96	MAR 96	
Service Final DT&E				
Start	JAN 97	JAN 97	TBD	(Ch-2)
Complete	DEC 97	DEC 97	TBD	(Ch-2)
Low Rate Initial Production Decision (DAB)	JUN 97	JUN 97	TBD	(Ch-2)
Low Rate Initial Production Contract Award	JUL 97	JUL 97	TBD	(Ch-2)
Begin LRIP	N/A	N/A	DEC 97	(Ch-3)
Low Rate Production First Delivery IOT&E	MAY 98	MAY 98	TBD	(Ch-2)
Start	JAN 98	JAN 98	TBD	(Ch-2)
Complete	JUN 98	JUN 98	TBD	(Ch-2)
Milestone III Production Decision	AUG 98	AUG 98	TBD	(Ch-2)
Full Rate Production Contract Award	AUG 98	AUG 98	JUN 99	(Ch-4)
First Unit Equipped	SEP 98	SEP 98	SEP 99	(Ch-4)
Service Depot Support	SEP 01	SEP 01	TBD	(Ch-2)

(b)(1)

OTHER UPGRADES

Configuration 1 Production Confirmatory Test	MAR 95	MAR 95	SEP 95	(Ch-1)
Configuration 1 First Unit Equipped	JUN 95	JUN 95	DEC 95	(Ch-1)
Configuration 2 Follow On Test	DEC 95	DEC 95	TBD	(Ch-2)
Configuration 2 First Unit Equipped	JUN 96	JUN 96	TBD	(Ch-2)
Configuration 3 Follow On Test	JUN 98	JUN 98	TBD	(Ch-2)
Configuration 3 First Unit Equipped	SEP 98	SEP 98	TBD	(Ch-2)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Preliminary Design Review Complete changed from SEP 95 to OCT 95, Configuration 1 Production Confirmatory Test changed from MAR 95 to SEP 95, and Configuration 1 First Unit Equipped changed from JUN 95 to DEC 95 to indicate accomplished Milestones.

(Ch-2) Milestones listed as TBDs changed from the Approved Program objective date until BNDO/Army completes the new program estimate.

(Ch-3) Non-APB milestone estimate contained in the recent budget

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

decisions that have yet been validated through BMDO replanning.

(Ch-4) Schedule Milestones contained in the recent program budget decisions have yet been validated through BMDO replanning. The Full Rate Production contract award and First Unit Equipped changed from AUG 98 to JUN 99 and from SEP 98 to SEP 99, respectively, to reflect estimates explicitly stated in recent budget decisions. These estimates also exceed APB thresholds.

d. (U) References --

(U) Development Estimate:

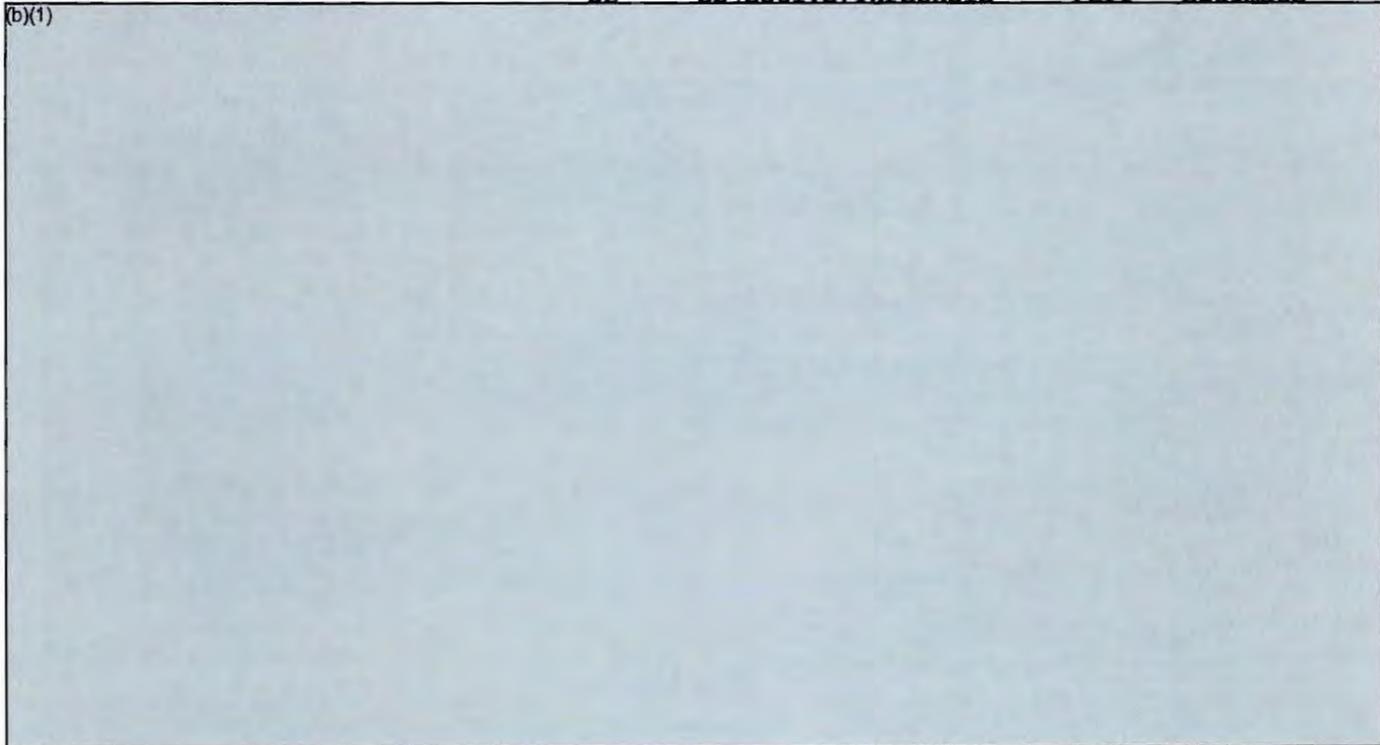
Milestone IV/II Acquisition Decision Memorandum, dated 7 July 1994, subject: "PAC-3 Acquisition Decision Memorandum," and the Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB) dated February 22, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current
	DE	Perf	Estimate
	Objective/Threshold		

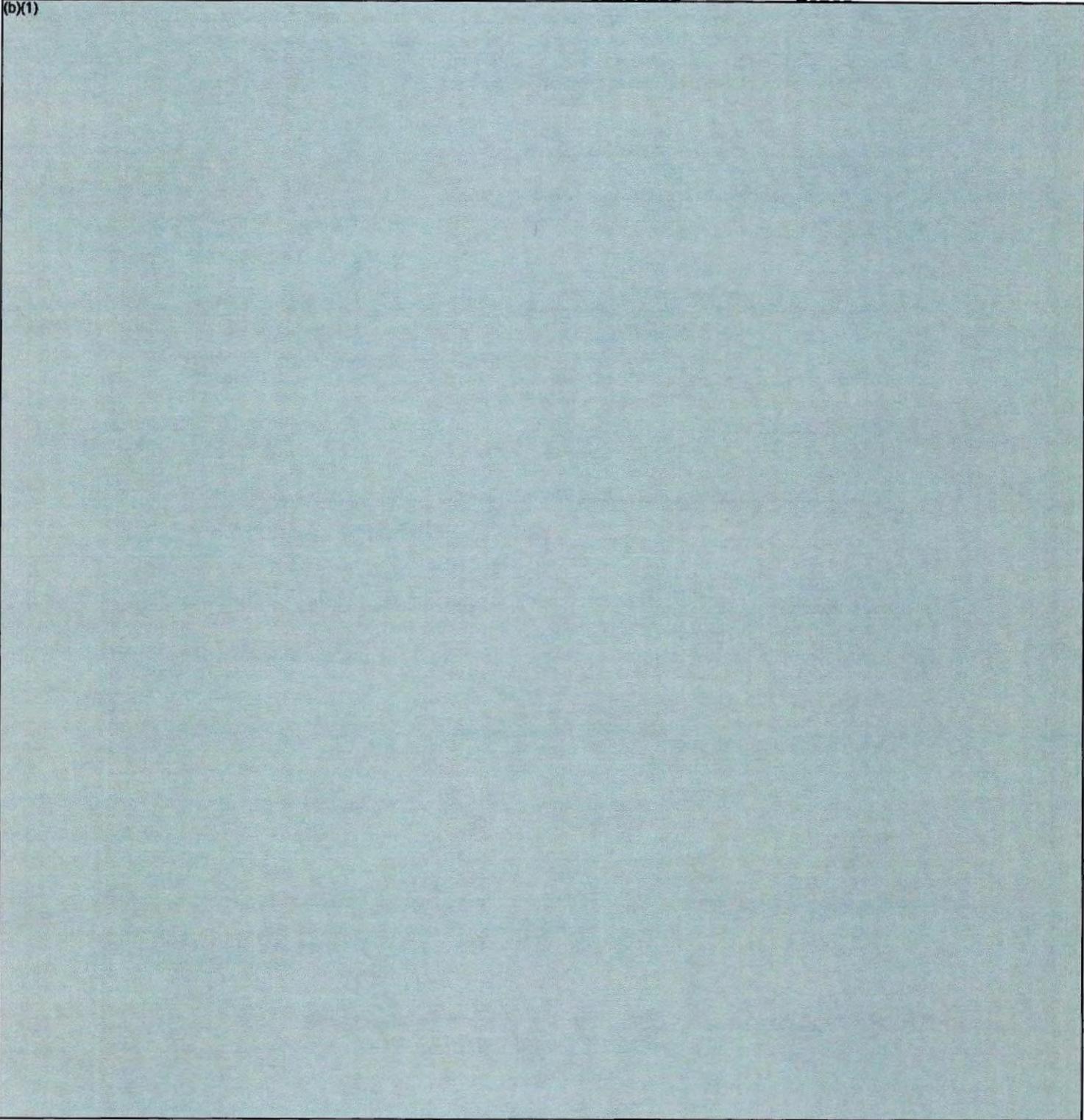


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10a. (U) Performance Characteristics (Cont'd):

(b)(1)



~~CONFIDENTIAL~~

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

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

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

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.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

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

a. (U) Cost --	<u>Development</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	2015.6	2015.6	2330.3
Procurement	2783.2	2783.2	2243.5
Recurring Flyaway	(1498.8)		(771.8)
Nonrecurring Flyaway	(1244.7)		(1347.6)
Total Flyaway	(2743.5)		(2119.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(39.7)		(124.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	4798.8	4798.8	4573.8
 Escalation	 1582.8	 1582.8	 1325.5
Development (RDT&E)	(420.2)	(420.2)	(532.2)
Procurement	(1162.6)	(1162.6)	(793.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6381.6	6381.6	5899.3

The Current Estimate shown is a partial estimate which will significantly change as BMDO/Army prepare a new estimate based the

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11a. (U) Total Program Cost and Quantity (Cont'd):
replanning and restructuring of the PAC-3 program.

FIRE UNIT

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	54	54	54
Total	54	54	54

The Patriot PAC-3 unit of measure is a Fire Unit (FU) which consists of a Radar Set, an Engagement Control Station, an Electric Power Plant, and up to eight Launching Stations equipped with missiles.

The LRIP quantity for the PAC-3 missile established at Milestone II is 90.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

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.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 22, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	4573.8	4798.8	
(2) Quantity	54	54	
(3) Unit Cost	84.700	88.867	-4.69

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

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY88\$)	2243.5	2783.2	
(2) Quantity	54	54	
(3) Unit Cost	41.546	51.541	-19.39

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13. (U) Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Development Estimate	2435.8	3945.8	0.0	6381.6
Previous Changes:				
Economic	+20.9	+13.6	-	+34.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-242.6	-253.7	-	-496.3
Other	-	-	-	-
Support	-	-12.3	-	-12.3
Subtotal	-221.7	-252.4	-	-474.1
Current Changes:				
Economic	-21.0	-141.0	-	-162.0
Quantity	-	-	-	-
Schedule	93.7	-	-	+93.7
Engineering	-	-	-	-
Estimating	575.7	21.3	-	+597.0
Other	-	-536.9	-	-536.9
Support	-	-	-	-
Subtotal	+648.4	-656.6	-	-8.2
Total Changes	+426.7	-909.0	-	-482.3
Current Estimate	2862.5	3036.8	-	5899.3

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

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

	RDTE&	PROC	MILCON	TOTAL
Development Estimate	2015.6	2783.2	0.0	4798.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-189.9	-172.6	-	-362.5
Other	-	-	-	-
Support	-	-8.5	-	-8.5
Subtotal	-189.9	-181.1	-	-371.0
Current Changes:				
Quantity	-	-	-	-
Schedule	68.0	-	-	+68.0
Engineering	-	-	-	-
Estimating	436.6	16.7	-	+453.3
Other	-	-375.3	-	-375.3
Support	-	-	-	-
Subtotal	+504.6	-358.6	-	+146.0
Total Changes	+314.7	-539.7	-	-225.0
Current Estimate	2330.3	2243.5	-	4573.8

This current estimate truncates the program at FY2001, as the remaining program is being defined. This lack of program definition after FY2001 generates negative "Other Changes." The current estimate will significantly change as BMDO/Army prepare a new program estimate based on the replanning and restructuring of the PAC-3 program.

b. (U) Previous Change Explanations --

RDTE&

Economic: Revised escalation indices.

Estimating: Revised estimates for PAC-3 missile development, Multimode and ERINT DEM/VAL missile downselect, missile risk mitigation, and realignment of radar requirements.

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

Procurement

Economic: Revised escalation indices.
 Estimating: Refined estimates for upgrades to PAC-3 configuration.
 Support: Revised estimate for modification of initial spares.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-21.0
Adjustment for current & prior inflation. (Estimating)	+9.7	+12.8
Extension of Missile EMD program by one year. (Schedule)	+68.0	+93.7
Increased estimate for missile EMD. (Estimating)	+262.3	+343.5
Restructure of upgrade program to include additional support tasks. (Estimating)	+50.1	+65.3
Additional funding for Anti-Cruise Missile effort. (Estimating)	+26.3	+33.9
Additional costs for EMD targets, lethality and OT&E. (Estimating)	+88.4	+120.5
Refined estimate for P3I test program. (Estimating)	-0.2	-0.3
RDT&E Subtotal	<u>+504.6</u>	<u>+648.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-160.0
Economic adjustment for negative program change. (Economic)	N/A	+19.0
Adjustment for Current & Prior Inflation. (Estimating)	+16.7	+21.3
Program Budget Decision requires program restructuring and redefinition. Lack of program definition beyond FY2001 is causing artificially negative program variances. (Other) (Missile Quantities remains at 1200).	-375.3	-536.9
Procurement Subtotal	<u>-358.6</u>	<u>-656.6</u>

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
118.178	-2.361	--	1.735	--	1.865	-9.943	-0.228	-8.932	109.246

The PAUC is expected to significantly change when BMDO/Army completes the replanning and restructuring of the PAC-3 program.

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

a. (U) RDT&E --

(U) <u>FY89 ENGINEERING LEVEL:</u> RAYTHEON Co., REDFORD, MA DAAH01-89-C-0458, CPIF Award: April 10, 1989 Definitized: April 10, 1989	Initial Contract Price		
	Target	Ceiling	Qty
	\$159.8	N/A	0

Current Contract Price	Estimated Price At Completion	
	Contractor	Program Manager
Target Ceiling Qty	Target Ceiling Qty	Target Ceiling Qty
\$162.1 N/A 0	\$181.6	\$182.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-17.8	\$-4.1
Cumulative Variances To Date (12/31/95)	\$-24.9	\$-2.1
Net Change	\$-7.1	\$2.0

Explanation of Change:

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

The change in the Current Contract Target Price is due to contract modifications for the CDI-3 task. The increase in the cumulative unfavorable cost variance is primarily due to overruns in the Radar Enhancement Phase III development task which completed in Nov 95.

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

The variances were driven by redesigns of transmitter and exciter subassemblies; increased complexity in test equipment design; and extended testing and evaluation of the modification hardware. The favorable change in the cumulative schedule variance is due completion of past due activities in Factory Test Equipment design and hardware fabricating associated with the Radar Enhancement Phase III task. The remaining contract effort is CDI-3.

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

(U) <u>FY91 ENGINEERING DEVEL:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
RAYTHEON Co., BEDFORD, MA					
DAAH01-91-C-0602, CPIF			\$171.8	N/A	0
Award: September 25, 1991					
Definitized: September 25, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$159.7	N/A	0	\$161.3	\$161.3	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$5.1	\$-5.8	
Cumulative Variances To Date (12/31/95)			<u>\$0.7</u>	<u>\$-4.4</u>	
Net Change			\$-4.4	\$1.4	

Explanation of Changes:

This contract contains six independent tasks with varying periods of performance. The tasks are: Guidance Enhancement Missile (GEM), Improved Launcher, Improved Propulsion, Multimode Risk Reduction, Routing Logic Radio Interface Unit (RLRIU) Upgrade, and Components and Hardware. The RLRIU Upgrade and GEM tasks are Army P3I funded, and the other tasks are TMDI funded.

The cumulative schedule variance is primarily associated with the Improved Propulsion task which was directed to stop work in Feb 94 as a result of the ASARC decision to proceed with ERINT as the PAC-3 missile. The variance for the Improved Propulsion task reflects accomplishment against the original schedule, however, remaining contract effort was descoped based on the stop work order and the schedule was not replanned.

The GEM task was the primary contributor to the unfavorable cost variance at completion. The overrun was attributable to delays in conducting GEM flight tests. All other tasks completed at target cost. This contract has met the 90% completion criteria and this is

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18. (U) Contract Information (Cont'd):
the final report for this contract. There are no additional impacts to the contract associated with the variances.

			Initial Contract Price	
			<u>Target</u>	<u>Ceiling</u>
(U) <u>PAC-3 MISSILE EMD:</u>				
LORAL VOUGHT SYSTEMS, DALLAS, TX				
DAAH01-95-C-0021, CPIF/AF				
Award: October 26, 1994				
Definitized: November 7, 1995				
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$582.5	N/A	0	\$582.5	\$582.5
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date (12/31/95)			\$-12.0	\$-15.9
Net Change			\$-12.0	\$-15.9

Explanation of Changes:

The PAC-3 Missile Engineering and Manufacturing Development (EMD) contract was awarded as a letter contract on 26 Oct 94 and definitized on 7 Nov 95 at a Target Price of \$515.8M. Contract modifications have been incorporated but not definitized for risk mitigation; additional flight tests; and update of and compliance with the Security Classification Guide at an additional NTS price of \$66.7M.

The cumulative unfavorable variances are based on the Nov 95 definitized contract Performance Measurement Baseline (PMB). The PAC-3 program is being restructured based on funding guidance contained in the approved Program Budget Decision 224. The program restructure will add scope, schedule, and funding to the contract to mitigate risk in the EMD effort. The contract PMB will be revised to implement the program restructure.

Although variances to date indicate unfavorable performance, assessment of overall contract performance at completion is not meaningful at this time due to the impending program restructure.

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

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.8	N/A	0	\$104.8	\$104.8
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date (12/31/95)			\$0.7	\$-1.7
Net Change			\$0.7	\$-1.7

Explanation of Change:

The PAC-3 Missile Segment Integration contract was awarded on 31 Oct 94 at a Not-to-Exceed price of \$120.8M. The contract was definitized on 23 Oct 95 at a Target Price of \$104.8M.

The cumulative cost variance is insignificant. The cumulative unfavorable schedule variance is primarily due to delays in performance of software development and systems engineering activities.

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

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>REM LCH COMMO ENH UPGRAD:</u> Raytheon Co., Bedford, MA DAAF01-96-C-0018, CPIF Award: November 6, 1995 Definitized: N/A	\$0.0	\$66.5	0

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$0.0	\$66.5	0	\$66.5	\$66.5
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date			N/A	N/A
Net Change			\$0.0	\$0.0

Explanation of Change:

The Remote Launch/Communications Enhancements Upgrade development contract was awarded on 6 Nov 95, at a Not-to-Exceed price of \$66.5M.

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

(U) <u>RADAR ENH PH3 MOD KITS:</u> Raytheon, Co., Bedford, MA DAAH01-95-C-0446, FFP Award: September 29, 1995 Definitized: N/A	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$0.0	\$213.3	0
	Current Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$0.0	\$213.3	0
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
	\$213.3	\$213.3	

Explanation of Change:

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

The Radar Enhancement Phase 3 Modification Kits contract for six modification kits and spares was awarded on 29 Sep 95, at a Not-to-Exceed (NTE) price of \$90.2M. The initial contract award was a limited procurement to support program test and evaluation. A full production decision was authorized in Dec 95 for up to sixty-nine additional modification kits and spares to retrofit the balance of PATRIOT Fire Units. A contract modification for procurement of sixteen kits and spares was awarded on 29 Dec 95, at an NTE price of \$123.1M.

This contract is Firm Fixed Price with no requirement for cost performance reporting.

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

a. (U) Program Status --

- (1) Percent Program Completed: 73.7% (14 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 54.3% (\$3204.5 / \$5899.3)

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY83-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	1716.9	428.7	393.8	323.1	2862.5
Procurement	763.8	295.1	233.8	1744.1	3036.8
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	2480.7	723.8	627.6	2067.2	5899.3

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY88 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

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

1989				21.8	23.4	23.4	23.4	4.2
1990				28.7	32.1	31.8	31.5	4.1
1991				39.6	45.9	45.8	45.6	4.3
1992				32.0	37.9	37.8	37.8	3.0
1993				37.8	45.8	36.3	36.3	2.7
1994				31.5	39.0	39.0	34.8	2.0
1995				18.5	23.4	20.0	18.0	1.9
1996				36.2	46.7	5.0	0.2	2.0
1997				9.3	12.3			2.2

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1998				7.0	9.4			2.2
1999				4.7	6.5			2.3
2000				4.1	5.8			2.2
2001				3.3	4.8			2.2
Subtot				274.5	333.0	239.1	227.6	

Appropriation: 2032 Missile Procurement, Army

1990		16.5		16.5	19.1	17.9	17.4	4.1
1991		126.1		126.1	149.6	142.3	118.4	4.3
1992		39.8		39.8	48.3	46.2	15.2	3.0
1993		13.7		14.3	17.7	15.9	13.4	2.7
1994		14.7		20.1	25.4	25.1	24.0	2.0
1995		20.1		25.1	32.3	30.4	26.1	1.9
1996		5.2		7.8	10.2	8.2	2.1	2.0
1997		8.5		13.7	18.4			2.2
1998		10.8		12.8	17.5			2.2
1999		11.5		14.1	19.7			2.3
2000		25.5		28.3	40.5			2.2

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2001		13.5		15.5	22.6			2.2
Subtot		305.9		334.1	421.3	286.0	216.6	
Army		305.9		608.6	754.3	525.1	444.2	

Appropriation: 0400 RDT&E, Defense Agencies

1983				38.0	33.3	33.3	33.3	4.0
1984				26.5	24.1	24.1	24.1	3.8
1985				21.8	20.4	20.4	20.4	3.4
1986				15.7	15.1	15.1	15.1	2.8
1987				30.4	30.2	30.2	30.2	2.7
1988				17.4	18.0	18.0	18.0	3.0
1989				60.6	65.2	65.2	65.2	4.2
1990				34.2	38.3	38.3	38.3	2.0
1991				126.5	146.5	145.2	144.5	4.3
1992				258.2	306.0	306.0	301.2	3.0
1993				173.7	210.7	210.7	210.0	2.7
1994				174.9	216.2	193.2	192.2	2.0
1995				273.7	345.4	325.0	311.1	1.9

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PATRIOT PAC-3, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1996				296.3	382.0	55.0	5.5	2.0
1997				289.5	381.5			2.2
1998				144.9	195.3			2.2
1999				73.5	101.3			2.3
Subtot				2055.8	2529.5	1479.7	1409.1	

Appropriation: 0300 Procurement, Defense Agencies

1992		20.6		20.6	25.0	20.0	15.5	3.0
1993		60.8		60.8	75.2	58.0	32.6	2.7
1994		94.1		95.2	120.1	98.0	44.0	2.0
1995		191.3		194.8	251.1	204.0	203.9	1.9
1996		222.3		217.8	284.9	115.3	17.8	2.0
1997		141.5		160.8	215.4			2.2
1998	60	114.0	121.3	263.9	361.4			2.3
1999	75	75.6	167.9	266.5	373.0			2.2
2000	190	111.5	196.7	322.4	461.2			2.2
2001	210	10.0	285.9	306.6	448.2			2.2
Subtot	535	1041.7	771.8	1909.4	2615.5	495.3	313.8	

PATRIOT PAC-3, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

DoD	535	1041.7	771.8	3965.2	5145.0	1975.0	1722.9	
Grand Total	535	1347.6	771.8	4573.8	5899.3	2500.1	2167.1	

The Program Acquisition Unit Cost (PAUC) unit of measure is tactical Fire Units (FUs) and all FUs have been procured and fielded. The end item quantities reported above are missile procurements. Non-recurring procurement costs include all costs except missile hardware costs.

Program definition and corresponding funding/quantities beyond FY2001 are unavailable as BMDO/Army PAC-3 replanning is underway. However missile quantities remain at 1200.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

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

The concept of operation is 54 tactical Fire Units (FUs). The costs are the direct cost to support the primary personnel and to operate the FUs. The O&S consumables are replenishment spares, repair parts, and petroleum, oil and lubricants (POL). The Direct Depot Maintenance costs are the labor, materials, and transportation for

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

repair of major FU component parts, and software support. The sustaining investment consists of modification kits and support operations. Other Direct Support costs include maintenance civilian labor, and other direct support for mod kit installation. The Indirect Costs are for indirect support operations, Military Occupational Specialty (MOS) training costs, Quarters Maintenance and Utilities, Post Production Engineering, Central Supply, Unit Operations, Base Operations, and training activities. PAC-3 is an upgrade program to the fielded PATRIOT system, therefore, O&S costs remain unchanged. There is no antecedent system.

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

Cost Element	Avg Annual Cost Per Patriot PAC-3 Fire Unit	Avg Annual Cost Per Antecedent System N/A
Military Personnel	2.0	N/A
O&S Consumables	0.9	N/A
Direct Depot Maintenance	0.6	N/A
Modifications	0.2	N/A
Other Dir Spt Opns	0.1	N/A
Indirect Spt Opns	1.2	N/A
Total	5.0	N/A

c. (U) Contractor Support Costs -- None.

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

PROGRAM: AN/SQQ-89 ASWCS

AS OF DATE: December 31, 1995

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

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
PM for Surface Ship ASWCS Program CAPT G. K. NIFONTOFF
ATTN: PMS411 Assigned: January 31, 1992
2531 Jefferson Davis Hwy AV 664-5061 COMM (703) 746-3000
Arlington, VA 22242-5169

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

RDT&E:

- PE 0205620N Project V0896, V1916
- PE 0604212N Project W1707
- PE 0604575N Project S1451
- PE 0604713N Project S0234, V1916

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AN/SQQ-89 ASWCS, December 31, 1995

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

PROCUREMENT:

APPN 1810 ICN 33213300 (Navy)
APPN 1810 ICN 33213400 (Navy)
APPN 1810 ICN 33213600 (Navy)
APPN 1810 ICN 33223600 (Navy)
APPN 1810 ICN 33425500 (Navy)
APPN 1810 ICN 33425500 (Navy)
APPN 1810 ICN 33545200 (Navy)

MILCON:

PE 0204262N

O & M:

PE 78012N, 78017N

5. (U) Related Programs:

LAMPS MK III

(b)(1)



7. (U) Program Highlights:

a. (U) Significant Historical Developments --

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

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AN/SQQ-89 ASWCS, December 31, 1995

7a. (U) Program Highlights (Cont'd):

contractor teams led by Westinghouse Electric Corporation (WEC) and Raytheon, the Navy competitively selected the WEC team to compete against the GE team for AN/SQQ-89 production. While GE was the first to produce integrated AN/SQQ-89s, WEC won the first production competition in FY90 and subsequently the FY92-95 production lots.

The FY90, FY91 and FY92 Appropriation Acts directed that the AN/SQQ-89 be redesigned to incorporate a new display, (now known as AN/UYQ-65), based on the Advanced Video Processor (AVP). In FY90, FY91 and FY92, Congress directed the redesign of AN/SQQ-89 to incorporate the AN/UYQ-2 Enhanced Modular Signal Processor (EMSP).

The AN/SQY-1 program was terminated in November 1991. Funds for the Surface ASW Systems Improvement program were transferred to the AN/SQQ-89 ASWCS SAR beginning in December 1991.

In FY94 Congress directed the Navy to use commercial emulators in place of Mil-Spec display equipment. AN/SQQ-89 FY94 through FY96 AN/UYQ-21 display requirements will be met by refurbishing existing shore-based AN/UYQ-21s and upgrading their configuration for shipboard use. The AN/UYQ-70 commercial display work station will be used starting with the last AN/SQQ-89 in FY96.

All full-up production AN/SQQ-89 and AN/SRQ-4 systems beyond FY95 will be procured exclusively with SCN funds for the DDG Flight IIA. This will be addressed as part of the DDG 51 SAR. After FY92, OPN funds cover system backfit modifications and improvements which will continue to be reported in the AN/SQQ-89 SAR.

In an effort to reduce initial procurement, upgrade cost, and life cycle logistic costs, the Navy is incrementally converting the AN/SQQ-89(V) architecture to a modular system based on industry standard commercial "off the shelf" (COTS) hardware and software. Starting with our FY96 buy, most of the remaining Mil-Spec units that have COTS equivalents are being replaced.

b. (U) Significant Developments Since Last Report --

The AN/SRQ-4 solicitation for FY95 to FY99 production requirements was issued 2 May 1995 under full and open competition. The incumbent, Lucas Aul, was not eligible to compete due to their debarment.

On 17 May 1995, WEC asked the U.S. District Court for a temporary restraining order and subsequent injunction directing the Navy to cancel the competitive procurement for FY96-00 AN/SQQ-89 requirements. On 30 June 1995, the Court ruled that competitive procurement could proceed. The competitive solicitation was

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AN/SQQ-89 ASWCS, December 31, 1995

7b. (U) Program Highlights (Cont'd):

released in August 1995, and proposals were received from Westinghouse and Lockheed-Martin.

On 10 August 1995, WEC reaffirmed its intent to submit a claim for as much as \$170 million in damages if the Navy issued a competitive RFP for FY96-00 AN/SQQ-89 requirements. They stated their claim would be based upon performing the FY92-95 production contract in the belief that they would receive subsequent AN/SQQ-89 contracts on a sole source basis. WEC continues to meet all requirements on the FY92-95 contract and has not submitted a claim.

In an effort to provide the latest technology to the fleet, OPNAV has directed that Engineering Change (EC) 16 be procured and installed on board CGs 47-55 with OPN funds. This EC kit will upgrade the existing AN/SQS-53A active sonar to an AN/SQS-53D which will provide a significant performance improvement. Installation of the EC-16 Kits on board CGs 47-53 will give these systems a recognized variant, the AN/SQQ-89(V)11. Installation on board CGs 54 and 55 will upgrade the SCN AN/SQQ-89(V)2 to an AN/SQQ-89(V)11.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date --

The Firm Fixed Price (FFP) AN/SRQ-4 Production Contract, N00024-96-C-6395, was awarded to Frequency Engineering Laboratories on 30 January 1996. The basic contract is valued at \$6.4M.

The FFP AN/SQQ-89(V) Production Contract, N00024-96-C-6300, was awarded to Lockheed Martin Integrated Systems on 27 February 1996. The FY96 basic contract is valued at \$65.0M.

The Cost Plus Award Fee AN/SQQ-89(V) Design Agent and Technical Services Contract, N00024-96-C-6301, was awarded to Lockheed Martin Integrated Systems on 27 February 1996. The basic contract is valued at \$36.2M.

Captain Richard E. Goldsby assumed command of the AN/SQQ-89 Surface Ship ASW Program, PMS411, on 20 February 1996 replacing Captain Gerald K. Nifontoff.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline, dated 10 May 91. There are no Nunn-McCurdy unit cost breaches.

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AN/SQQ-89 ASWCS, December 31, 1995

9. (U) Schedule:

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

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated May 10, 1991.

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AN/SQQ-89 ASWCS, December 31, 1995

10. (U) Performance Characteristics:

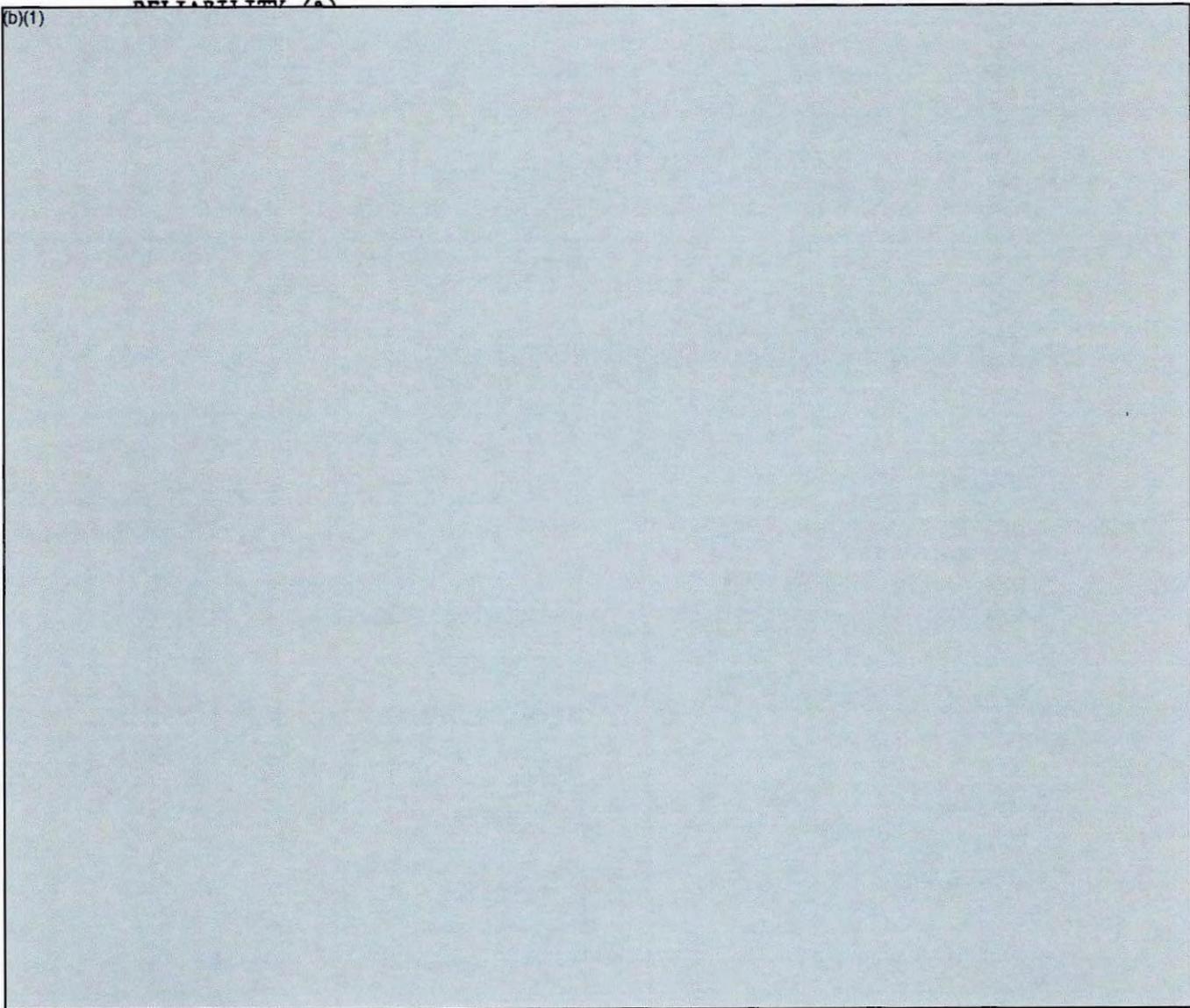
a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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AN/SRQ-4

DATA TRANSFER

RELIABILITY (A)

(b)(1)



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AN/SQQ-89 ASWCS, December 31, 1995

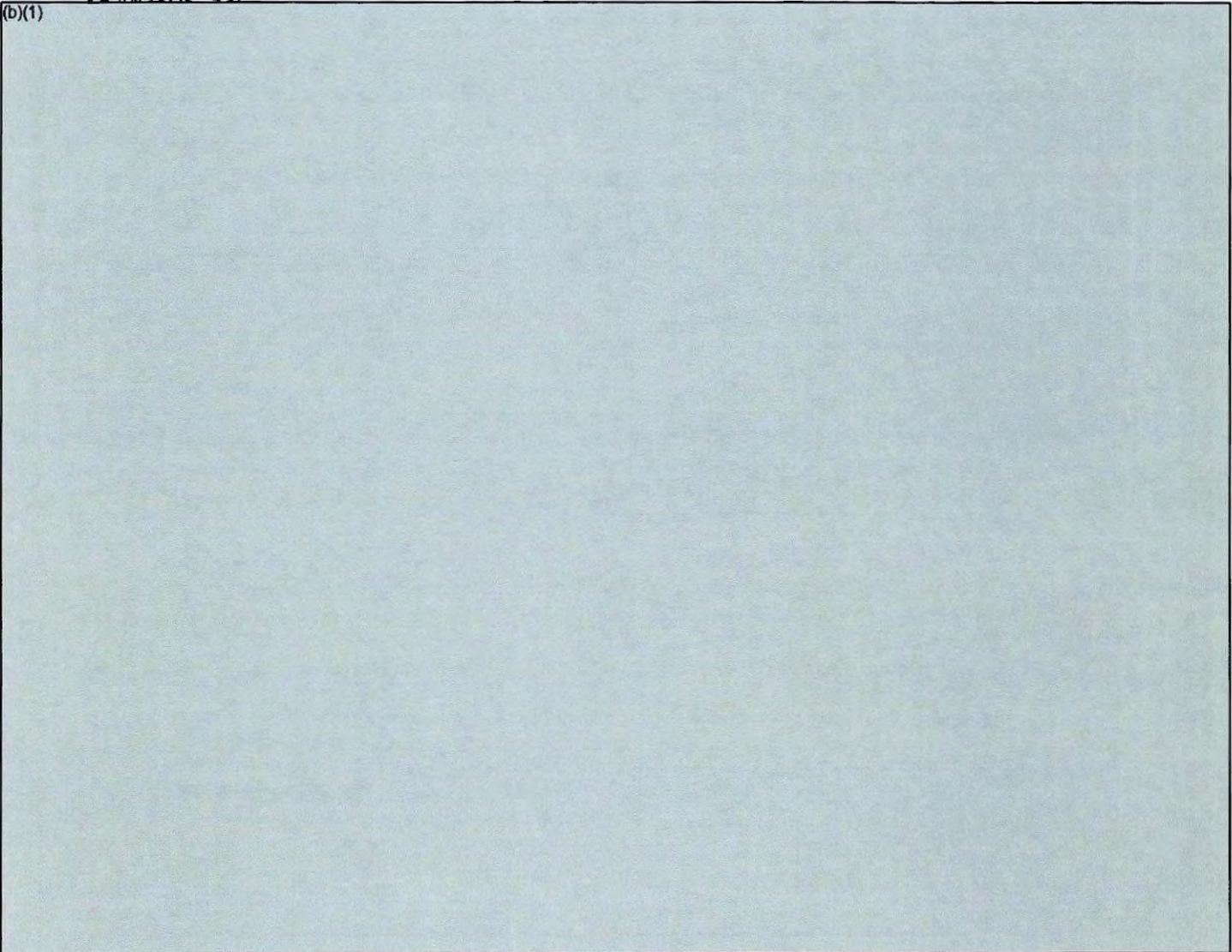
10a. (U) Performance Characteristics (Cont'd):

<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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The AN/SQQ-28 is required to process the sonobuoys identified, and has demonstrated this capability

AN/SQS 52C

(b)(1)



AN/SQQ-89 ASWCS, December 31, 1995

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
(b)(1)				

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

(b)(1)

b. (U) Previous Change Explanations --

Demonstrated performances of the AN/SQR-19 subsystem Figure of Merit (FOM) and Array MTBF have been revised to accurately show performance demonstrated subsequent to TECHEVAL/OPEVAL. The current estimates in Streaming and Recovery Time and Array MTTR have been revised to accurately show performance being achieved.

Operational performance thresholds for the AN/SQQ-89 system have been identified in TEMP 802-2.

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AN/SQQ-89 ASWCS, December 31, 1995

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

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated May 10, 1991.

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

	<u>Production</u>	<u>Approved</u>	<u>Current</u>
a. (U) Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	754.2	1331.2	1080.4
Procurement	2961.0	2637.6	2391.4
Major System Equipment	(1986.5)		(1324.7)
System Support	(207.9)		(412.0)
Total Sailaway	(2194.4)		(1736.7)
Other Weapon Systems Cost	(548.3)		(464.5)
Peculiar Support	(0.0)		(28.6)
Initial Spares	(218.3)		(161.6)
Construction (MILCON)	0.0	4.6	4.6
Ops. and Maint. (O&M)	<u>183.8</u>	<u>0.0</u>	<u>79.3</u>
Total FY 85 Base-Year \$	3899.0	3973.4	3555.7
Escalation	248.6	630.4	440.4
Development (RDT&E)	(-66.4)	(76.0)	(-26.3)
Procurement	(291.9)	(554.6)	(461.3)
Construction (MILCON)	(0.0)	(-0.2)	(-0.1)
Ops. and Maint. (O&M)	<u>(23.1)</u>	<u>(0.0)</u>	<u>(5.5)</u>
Total Then-Year \$	4147.6	4603.8	3996.1
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>120</u>	<u>92</u>	<u>91</u>
Total	120	92	91

c. (U) Foreign Military Sales/International Cooperative Programs --

(1) AN/SQR-19

Spain:

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AN/SQQ-89 ASWCS, December 31, 1995

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

3 AN/SQR-19(V)2 subsystems in FY83 for \$50.9M

1 AN/SQR-19(V)2 subsystem in FY87 for \$8.0M

2 AN/SQR-19A(V)2 subsystems in FY91 for \$11.8M

Canada:

7 OK-410(V)1/SQR Handling and Stowage Groups (H&SGs) and

8 OA-9056(V)2/SQR-19 Towed Array Groups (TAGs) in FY85 for \$47.1M

6 TAGs in FY91 for \$13.2M

(2) AN/SQQ-28

Spain:

4 AN/SQQ-28(V)2 subsystems in FY81 for \$14.2M

2 AN/SQQ-28(V)2 subsystems in FY92 for \$1.8M

Canada:

1 AN/SQQ-28(V)2 subsystem in FY85 for \$2.3M

(3) AN/UYQ-25

Spain:

6 AN/UYQ-25A(V)2 subsystems in FY93 for \$.5M

(4) AN/SRQ-4

Spain:

1 AN/SRQ-4 system in FY87 for \$0.8M

2 AN/SRQ-4 systems in FY90 for \$1.6M

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

(1) DCP-92 dated August 16, 1976 (AN/SQR-19)

(2) DCP-85 dated March 5, 1979 (AN/SRQ-4, AN/SQQ-28)

(3) OR 062-03-86 dated December 24, 1985 (AN/SQQ-89)

(4) ASN (RE&S) Milestone IIIC (NPDM held November 19, 1987; Decision Memorandum was issued March 1988) (AN/SQS-53C); The AN/SQS-53C subsystem entered full rate production in June 1989.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated May 10, 1991.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 91 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY85\$)	3555.7	3973.4	
(2) Quantity	91	92	
(3) Unit Cost	39.074	43.189	-9.53
b. (U) Procurement			
(1) Cost (BY85\$)	2391.4	2637.6	
(2) Quantity	91	92	
(3) Unit Cost	26.279	28.670	-8.34

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	687.8	3252.9	0.0	206.9	4147.6
Previous Changes:					
Economic	+3.9	+48.8	+0.1	+5.7	+58.5
Quantity	-	-1071.7	-	-	-1071.7
Schedule	+4.5	+643.9	-	-	+648.4
Engineering	+6.7	+418.9	-	-	+425.6
Estimating	+338.3	-381.2	-	-25.3	-68.2
Other	-	-	-	-	-
Support	-	-161.4	+4.4	-102.5	-259.5
Subtotal	+353.4	-502.7	+4.5	-122.1	-266.9
Current Changes:					
Economic	-2.3	-15.0	-	-	-17.3
Quantity	-	273.6	-	-	+273.6
Schedule	-	-4.1	-	-	-4.1
Engineering	-	-21.5	-	-	-21.5
Estimating	15.2	-177.7	-	-	-162.5
Other	-	-	-	-	-
Support	-	47.2	-	-	+47.2
Subtotal	+12.9	+102.5	-	-	+115.4
Total Changes	+366.3	-400.2	+4.5	-122.1	-151.5
Current Estimate	1054.1	2852.7	4.5	84.8	3996.1

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AN/SQQ-89 ASWCS, December 31, 1995

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

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	754.2	2961.0	0.0	183.8	3899.0
Previous Changes:					
Quantity	-	-876.9	-	-	-976.9
Schedule	+4.7	+276.2	-	-	+280.9
Engineering	+9.0	+320.0	-	-	+329.0
Estimating	+303.2	-221.2	-	-23.6	+58.4
Other	-	-	-	-	-
Support	-	-142.4	+4.6	-80.9	-218.7
Subtotal	+316.9	-644.3	+4.6	-104.5	-427.3
Current Changes:					
Quantity	-	203.8	-	-	+203.8
Schedule	-	-	-	-	-
Engineering	-	-17.0	-	-	-17.0
Estimating	9.3	-142.6	-	-	-133.3
Other	-	-	-	-	-
Support	-	30.5	-	-	+30.5
Subtotal	+9.3	+74.7	-	-	+84.0
Total Changes	+326.2	-569.6	+4.6	-104.5	-343.3
Current Estimate	1080.4	2391.4	4.6	79.3	3555.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
 Schedule: Program restructured due to funding constraints.
 Engineering: System redesigned to use new Navy standard hardware.
 Estimating: Increased contractor support costs, hardware development and integration costs. Transfer of funds from the AN/SQY-1 program. Extension of program through FY01.

Procurement

Economic: Revised escalation indices.
 Quantity: Decreased ship market.

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AN/SQQ-89 ASWCS, December 31, 1995

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

Schedule: Revised ship installation schedule with reduction in procurement rate.
Engineering: System redesigned to use new Navy standard hardware.
Estimating: Contract savings, reduction of unallocated budget and rescope of lab effort. Current and prior inflation offset.
Support: Change in procurement requirements and contract savings. Decrease in spares and other support due to funding constraints.

MILCON

Support: PMA266 transfer of AN/SQQ-28 and AN/SRQ-4 MILCON funding for the construction of operations and maintenance facilities in Mayport, Florida and North Island, San Diego, California.

O & M

Economic: Revised escalation indices.
Estimating: Refinement of estimate to include two additional program years for AN/SRQ-4 and AN/SQQ-28 programs.
Support: O&M,N funding has been transferred to OPN FMP.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.6
Refinement of In-House Effort. (Estimating)	-1.5	-2.2
Extension of program through FY03. (Estimating)	+10.4	+16.8
RDT&E Subtotal	<u>+9.3</u>	<u>+12.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-14.7
Economic adjustment for negative program change. (Economic)	N/A	-0.3
Total variance associated with increase from 83 to 91 systems.	+86.1	+115.6
Quantity increase of 8 units (83 to 91 systems.) (Quantity)	+203.8	+273.6

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Allocation to estimating as a result of quantity increase. (Estimating)	-117.7	-158.0
Acceleration/Stretchout of annual procurement buy profile for FYs 95 & 96. (Schedule)	--	-4.1
Savings associated with procurement of COTS equipment vs. Mil-Spec equipment (Engineering)	-17.0	-21.5
Adjustment for Current and Prior Inflation. (Estimating)	+3.4	+4.9
Decrease in inhouse spt, prod impvmt, & consulting svcs (Estimating)	-3.8	-5.4
Decrease in system unit cost associated with procurement of EC-16 (Estimating)	-49.4	-60.6
Extension of program through FY03 (Estimating)	+24.9	+41.4
Adjustment for Current and Prior Inflation. (Support)	+2.1	+2.7
Additional spares associated with increase from 83 to 91 systems. (Support)	+10.6	+16.5
Trainers and support and test equipment. (Support)	+1.1	+1.7
Installation and system tech spt costs through FY03. (Support)	+16.7	+26.3
 Procurement Subtotal	 <u>+74.7</u>	 <u>+102.5</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
34.563	0.453	2.244	7.080	4.441	-2.535	--	-2.333	9.350	43.913

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

The EMSP software contract N00024-92-C-6316 is not reported because it is not a major contract.

a.(U) Procurement --
(U) AN/SQQ-89 ASWCS:

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Westinghouse Electric Co., Sykesville, MD N00024-92-C-6300, FFP Award: September 11, 1992 Definitized: September 11, 1992	\$143.2	N/A	7

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

Explanation of Change:

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

(U) AIDS DEVELOPMENT:

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Diagnostic Retrieval Sys, Oakland, NJ N00024-92-C-6308, CPIF/FFP Award: April 15, 1992 Definitized: April 15, 1992	\$85.0	N/A	83

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$84.1	N/A	141	\$84.1	\$84.1

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

Explanation of Change: None.

This contract consists of a definitized \$19.1M cost-plus incentive fee (CPIF) development effort and a \$65.0M firm-fixed price (FFP) procurement portion. The development portion is complete, and the production portion is expected to be definitized in April, 1996. We will be purchasing 138 production systems and have purchased 3 development systems for a total of 141 under this contract. (Note: The quantity of 83 shown in Initial Contract Price was for the minimum quantity to be purchased. The number was transposed (38) in the prior SAR.) The Statement of Work was restructured to reflect the change to develop an NDI/COTS-based system vice a fully

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

contractor developed system. This change resulted in more than expected cost savings, and as a result a greater quantity was able to be purchased. In anticipation of a contract overrun, the development portion was modified to restructure the cost overrun ratio from 60/40 to 0/100 (Government/Contractor), and DRS was relieved of the requirement for cost and schedule reporting.

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

a. (U) Program Status --

- (1) Percent Program Completed: 75.9% (22 yrs/29 yrs)
- (2) Percent Program Cost Appropriated: 93.0% (\$3717.5 / \$3996.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY75-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2003)	<u>Total</u>
RDT&E	995.1	9.6	4.9	44.5	1054.1
Procurement	2588.3	35.2	32.0	197.2	2852.7
MILCON	4.5	-	-	-	4.5
O&M	84.8	-	-	-	84.8
Total	3672.7	44.8	36.9	241.7	3996.1

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

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

1975				16.4	8.7	8.7	8.7	10.9
1976				18.8	10.6	10.6	10.6	6.6

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

197T				7.0	4.1	4.1	4.1	2.9
1977				41.6	25.1	25.1	25.1	2.6
1978				57.9	37.6	37.6	37.6	6.8
1979				65.0	46.6	46.6	46.6	8.4
1980				93.8	74.3	74.3	74.3	10.6
1981				81.2	70.2	70.2	70.2	10.6
1982				85.5	77.8	77.8	77.8	7.6
1983				94.5	89.9	89.9	89.9	4.9
1984				71.3	70.3	70.3	70.3	3.8
1985				60.4	61.4	61.4	61.4	3.4
1986				50.0	52.3	52.3	52.3	2.8
1987				35.9	38.6	38.6	38.6	2.7
1988				19.3	21.5	21.5	21.5	3.0
1989				14.6	16.9	16.9	16.9	4.2
1990				37.0	44.6	44.6	44.6	4.0
1991				96.1	120.1	118.2	112.6	4.3
1992				54.1	69.6	69.5	62.3	2.8
1993				12.8	16.9	16.9	16.5	2.7

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1994				16.9	22.7	22.7	19.7	2.0
1995				11.2	15.3	15.3	12.5	1.9
1996				6.9	9.6	3.8		2.0
1997				3.4	4.9			2.2
1998				4.5	6.6			2.2
1999				4.0	5.9			2.3
2000				5.0	7.6			2.2
2001				4.9	7.6			2.2
2002				5.2	8.3			2.2
2003				5.2	8.5			2.2
Subtot				1080.4	1054.1	996.9	974.1	

Appropriation: 1810 Other Procurement, Navy

1979			0.6	0.9	0.7	0.7	0.7	8.7
1980			2.5	2.7	2.3	2.3	2.3	10.6
1981			3.8	3.9	3.6	3.6	3.6	10.6
1982			33.5	39.4	37.6	37.6	37.6	7.6
1983	2	6.0	72.1	124.7	123.4	123.4	123.4	4.9

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pende	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1984	8	10.9	151.9	264.8	269.7	269.7	269.7	3.8
1985	9	7.7	137.4	234.1	245.5	245.5	245.5	3.4
1986	12	5.9	135.2	216.0	234.4	234.4	234.4	2.8
1987	6	10.7	133.1	211.7	238.0	238.0	238.0	2.7
1988	3	9.4	110.7	139.4	164.0	164.0	164.0	3.0
1989	5	34.3	137.5	186.5	227.7	225.6	215.9	4.2
1990	5	13.1	122.8	152.1	191.7	191.5	175.2	4.0
1991	6	63.8	117.0	216.9	278.4	276.3	242.4	4.3
1992	9	3.4	157.3	189.9	251.3	249.6	225.7	2.8
1993	6	1.0	69.3	98.5	132.0	130.8	99.4	2.7
1994	1	0.9	57.7	73.0	99.2	98.8	62.8	2.0
1995	4	3.9	36.2	64.0	88.8	76.7	8.7	1.9
1996	9	7.6	2.8	24.8	35.2	0.2		2.0
1997		0.9	7.0	22.1	32.0			2.2
1998		0.5	2.8	15.7	23.2			2.2
1999	4	3.9	11.5	25.6	38.8			2.3
2000	2	1.9	11.8	23.6	36.5			2.2
2001		0.3	11.2	23.0	36.4			2.2

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

2002		0.3	12.1	19.0	30.7			2.2
2003		0.3	12.2	19.1	31.6			2.2
Subtot	91	186.7	1550.0	2391.4	2852.7	2568.7	2349.3	

There are 91 funded OPN AN/SQ-89(V) systems which include 11 OPN configuration variants. The last full OPN system was procured in FY92 and installed in FY95. Each system will receive several incremental upgrades as part of the continuing program. Each system is counted at the time that its major OPN-funded upgrade is procured. OPN funding from FY93-03 is for upgrades and high priority performance improvements. Funding levels beyond FY03 are unknown and will be included as part of the POM 00 process.

Appropriation: 1205 Military Construction, Navy

1982				2.7	2.6	2.5	2.5	7.6
1983				1.9	1.9	1.9	1.9	4.9
Subtot				4.6	4.5	4.4	4.4	

Appropriation: 1804 Operation and Maintenance, Navy

1984				1.2	1.2	1.2	1.2	3.8
1985				15.2	15.4	15.4	15.4	3.4
1986				15.8	16.6	16.6	16.6	2.8

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

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1804 Operation and Maintenance, Navy (Cont'd)

1987				30.6	33.0	33.0	33.0	2.7
1988				11.0	12.2	12.2	12.2	3.0
1989				5.5	6.4	6.4	6.4	4.2
Subtot				79.3	84.8	84.8	84.8	
Grand Total	91	186.7	1550.0	3555.7	3996.1	3654.8	3412.6	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

RDT&E	<u>Plan/Actual</u>
Procurement	0/0 81/81

The AN/SQQ-89 ship systems are counted as being delivered at completion of installation and checkout. Trainers and shore sites are counted when they are delivered to the site. Additionally, trainers and shore sites are only included in the count if they are fleet operational systems. There are 24 delivered SCN systems, and 57 delivered OPN systems. The delivery quantity includes those OPN and SCN systems which completed installation and checkout prior to December 31, 1995.

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

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

a. (U) Assumptions and Ground Rules --

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

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

Cost Element	Avg Annual Cost Per system	Avg Annual Cost Per N/A
O&M,N	1.2	N/A
OPN	0.3	N/A
MPN	0.7	N/A
Total	2.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	35.3	3.0	3.0	18.0	59.3
Total	35.3	3.0	3.0	18.0	59.3

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TOMAHAWK (R/UGM-109), December 31, 1995

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

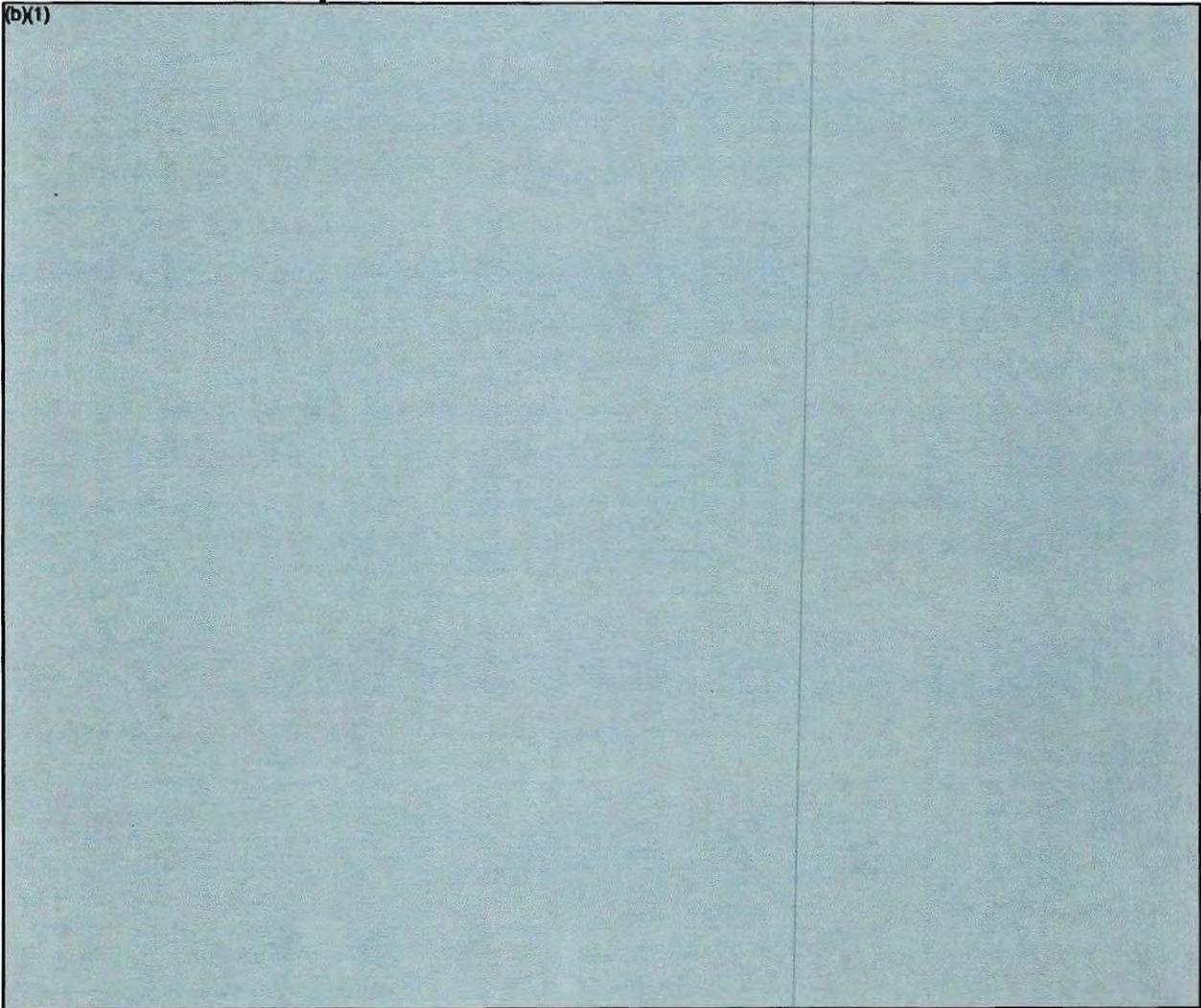
PROCUREMENT:

APPN 1810 ICN 33525000 (Navy)
APPN 1810 ICN 33525500 (Navy)
APPN 1810 ICN 33902000 (Navy)
APPN 1507 ICN 30210100 (Navy)
APPN 1507 ICN 30612000 (Navy)

5. (U) Related Programs:

Air-Launched and Ground-Launched Cruise Missiles (USAF); MK-41 Vertical Launching System; Harpoon Missile; OTH Targeting; SSN 21 Combat System Improvement; CG-47; DDG-51; DD-963; SSN-688; and SSN-637 Class Ships.

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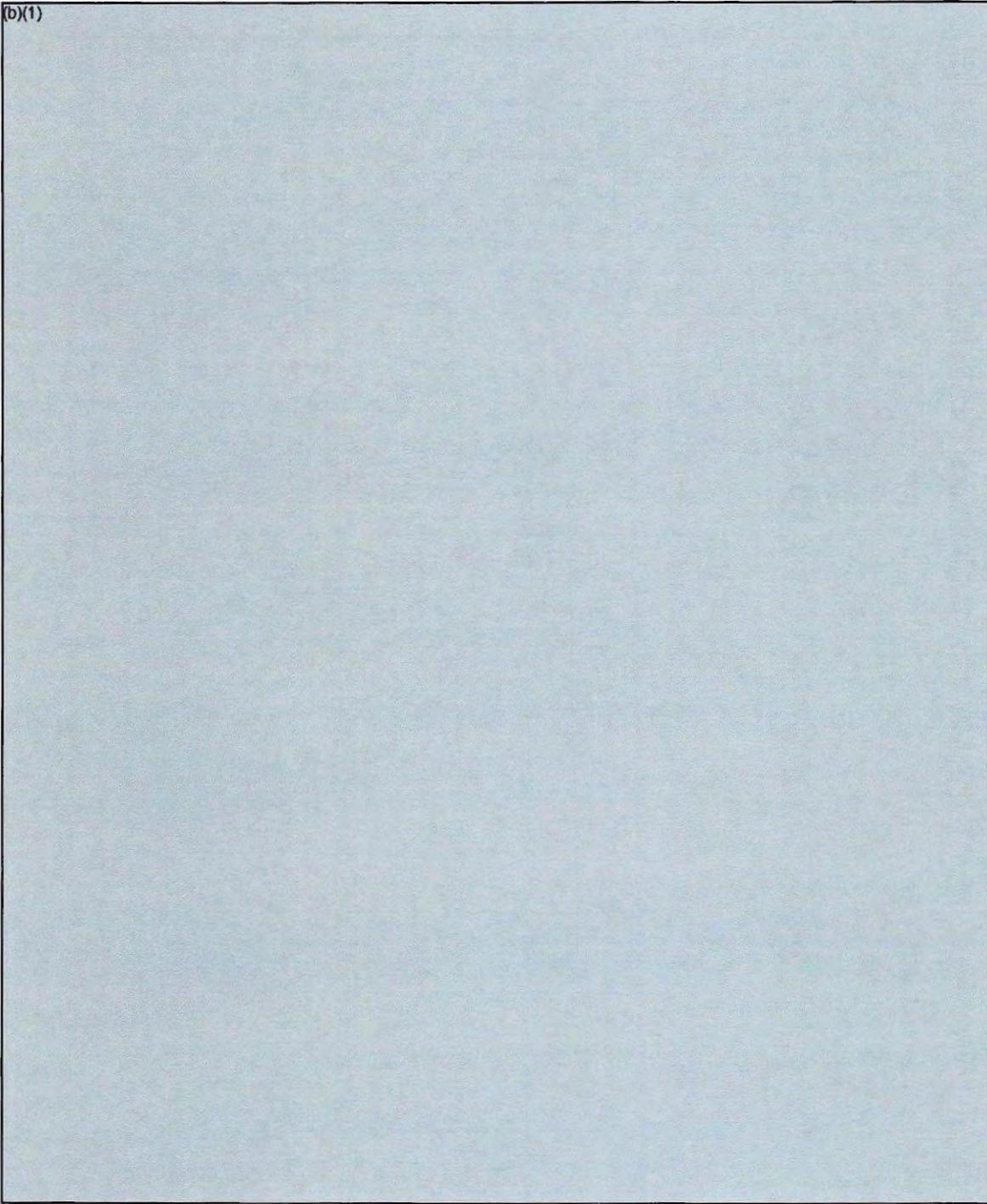


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c. (U) Changes Since As Of Date --
The Block IIIA and the Tomahawk modification for the UK Tomahawks contracts were awarded on 31 January 1996.

TOMAHAWK (R/UGM-109), December 31, 1995

8. (U) Threshold Breaches:

There is currently a schedule breach to the SAE approved Acquisition Program Baseline (APB) dated 16 September 1994, in the Tomahawk Baseline Improvement Program (TBIP) schedule. Dates were adjusted to reflect a 15 month program delay due to impacts from TSSAM program cancellation and budget reductions. A Program Deviation Report has been submitted. A new Acquisition Program Baseline will be submitted for approval as soon as the total impact has been ascertained. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

TOMAHAWK

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

TOMAHAWK (R/UGM-109), December 31, 1995

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

(U) Milestones (Cont'd) --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Land Attack Nuclear (Ship)	JUN 82	N/A	JUN 84
TMPC(U)	N/A	MAR 93	MAY 93
APS	N/A	JUN 93	SEP 93

b. (U) Previous Change Explanations --

Conventional Dispenser Variant OPEVAL completion was delayed from 7/87 to 5/88 due to ship availability and delay in missile delivery due to hardware availability. OPEVAL delays led to the NPDM delay from 12/87 to 8/88. IOC delays for Block IIB were caused by OPEVAL testing difficulties. IOC Block III AUR changed from March 1993 to April 1993 due to ship installation schedules. IOC for APS changed from August 1993 to September 1993 due to Ada and COTS software problems. Land Attack Conventional Block III AUR changed from Apr 93 to reflect actual date of accomplishment.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

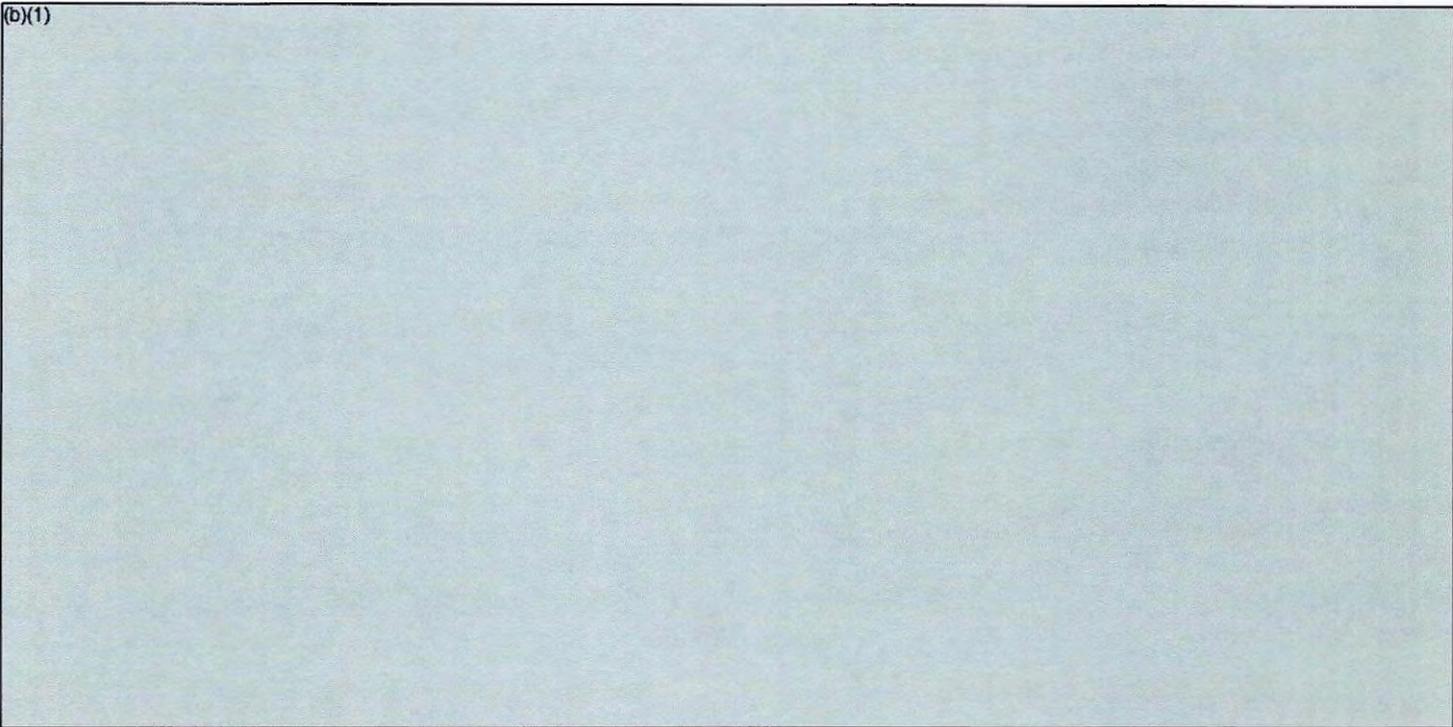
TOMAHAWK TBIP

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/II Development Contract Award	N/A	SEP 94	SEP 94
Tomahawk Multi-Mission Missile (TMM)			
Development Flight Test			
Start	SEP 97	SEP 97	JAN 99(Ch-1)
Complete (DT/OT)	JUN 99	JUN 99	OCT 00(Ch-1)

[REDACTED]

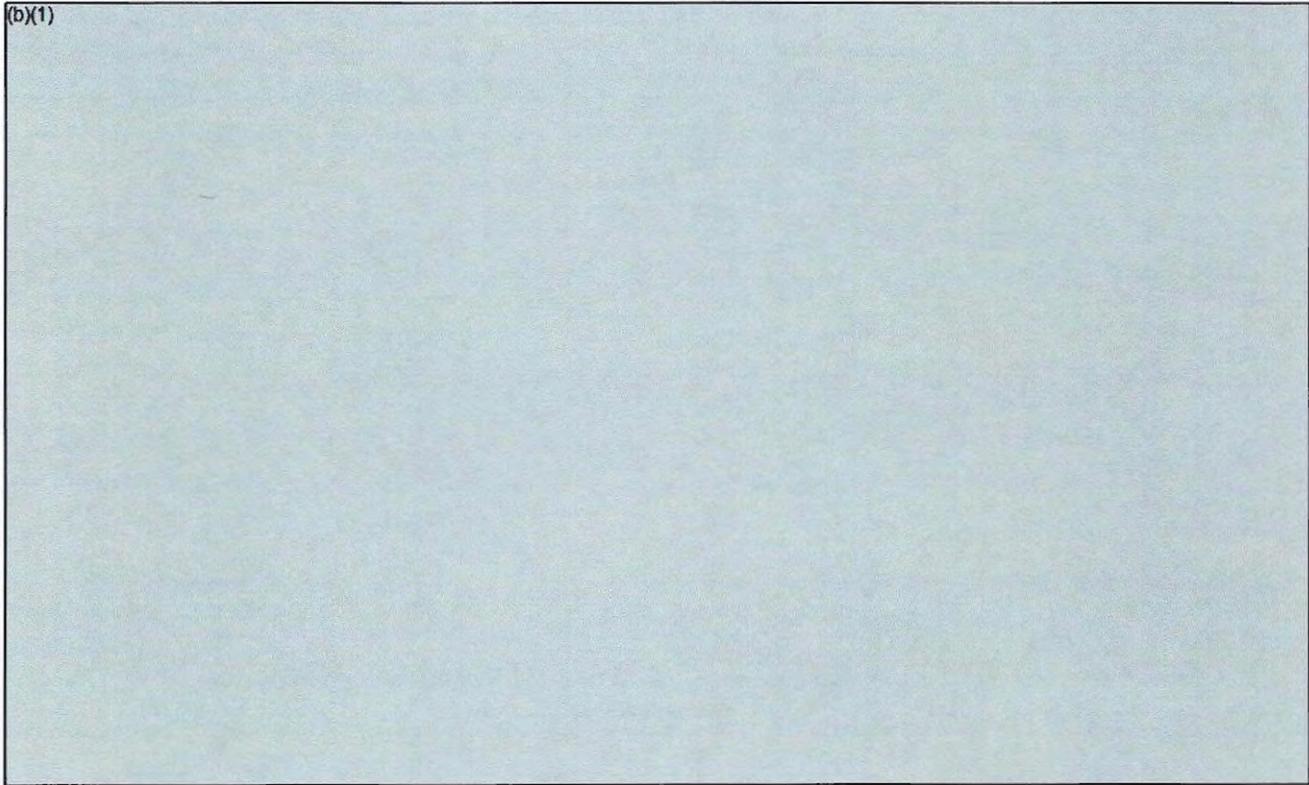
TOMAHAWK (R/UGM-109), December 31, 1995

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D. (U) Previous Change Explanations -- None.

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

d. (U) References --

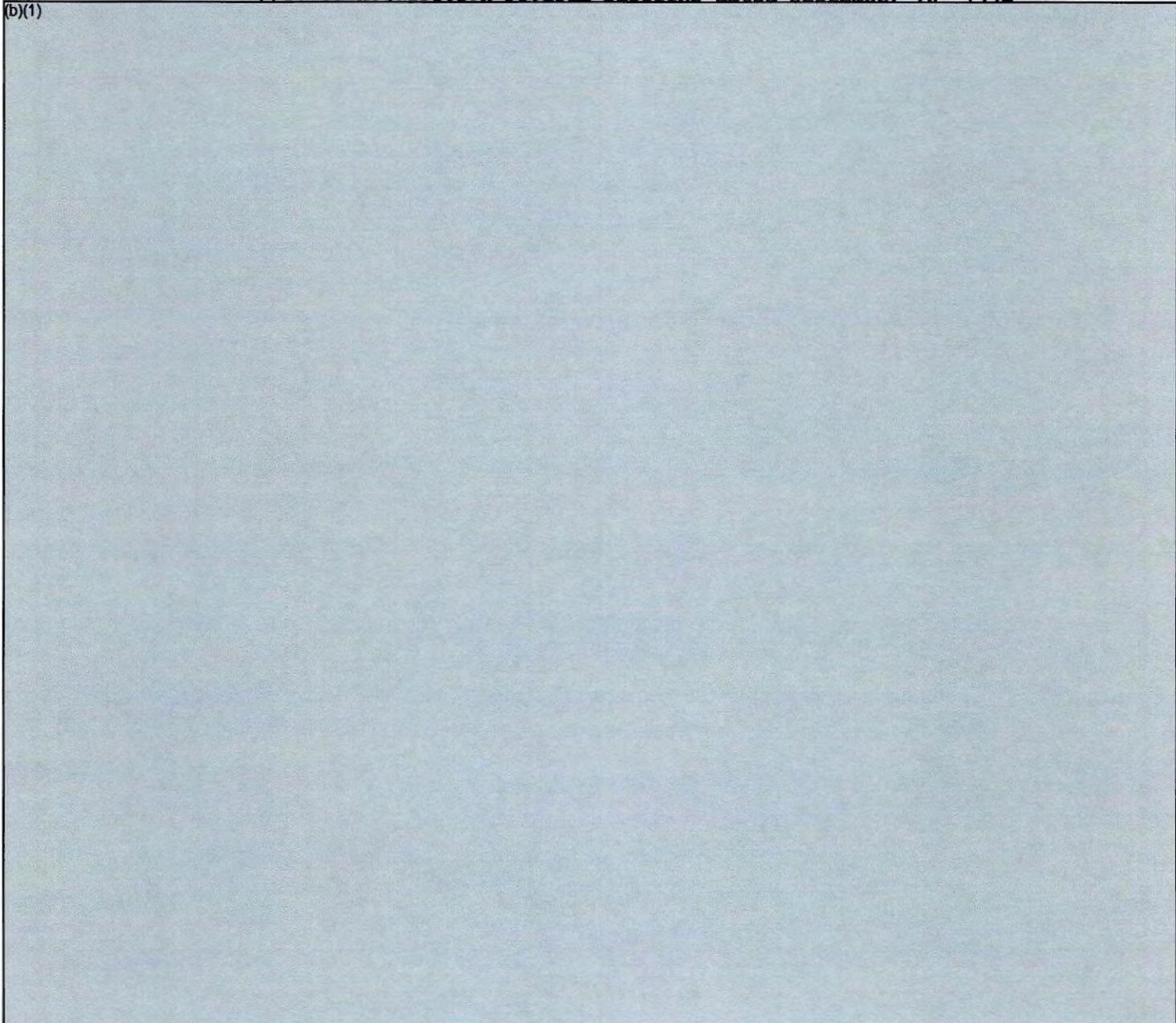
(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994

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b. (U) Previous Change Explanations --

Changes for Terminal Accuracy, Mission Reliability, Dispense Reliability and Mission Success are based on the aggregate results of on-going flight test demonstration and storage data of weapons systems. These changes were incorporated in the NAE approved Acquisition Program Baseline dated 12 Feb 92. Range Operational, TLAM/D, UGM-109D, Block III changed from N/A to TBD. Changes for Mission Reliability - TLAM-N/RGM/UGM-109A, TLAM-C/RGM-109C, UGM-109C; TLAM-D/RGM-109D/UGM-109D; TASM/UGM-109B; and Mission Success - TASM/RGM-109B; TLAM-D/UGM-109D, RGM-109D are results of incorporating the latest flight test and storage data through December 1994. Wave Height (Sea State) changed from N/A to actual value.

c. (U) Current Change Explanations --

(Ch-1) Updated to reflect ABP objectives. Currently scheduled for OTL-199 in FY97.

(Ch-2) Changes are all based on results of latest flight test and storage data through December 1995.

d. (U) References --

(U) Development Estimate:

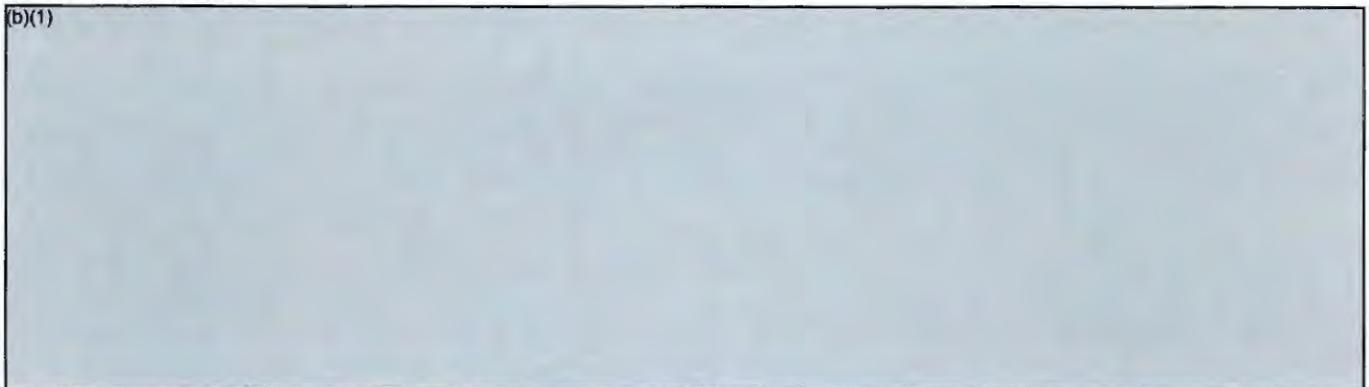
Draft DCP 125 dated Dec 22, 1976 (Land-Attack), Program Memorandum No. 117, Dec 22, 1976 (Anti-Ship) approved by SECNAV Jan 5, 1977; NDCP W0545 dated Aug 31, 1987, (Rev Aug 89), Annex B, (TOMAHAWK Weapons System) approved by OPNAV.

(U) Approved Program:

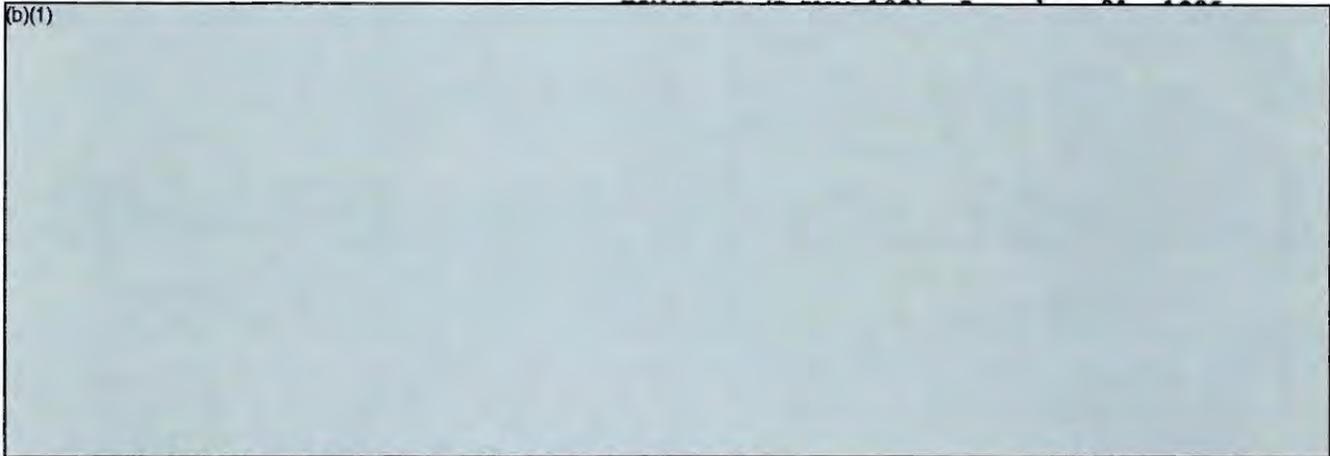
NAE Approved Acquisition Program Baseline dated September 16, 1994.

TOMAHAWK TBIP

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b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

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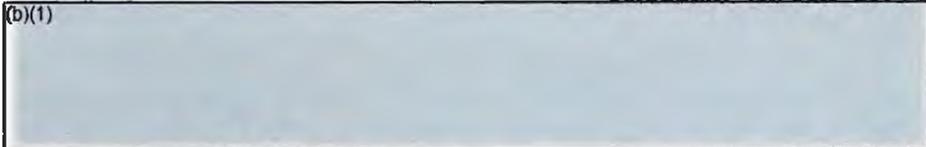


	<u>Development</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	782.8	1315.7	1343.2
Procurement	1023.6	4189.8	3988.0
Flyaway	(786.0)		(2965.0)
Other Weapon System	(90.2)		(658.3)
Peculiar Support	(81.1)		(229.9)
Initial Spares	(66.3)		(134.8)
Construction (MILCON)	0.0	32.1	36.3
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 77 Base-Year \$	1806.4	5537.6	5367.5
Escalation	616.5	6359.5	5883.8
Development (RDT&E)	(83.3)	(554.4)	(586.7)
Procurement	(533.2)	(5761.0)	(5248.1)
Construction (MILCON)	(0.0)	(44.1)	(49.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2422.9	11897.1	11251.3

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

TOMAHAWK (R/UGM-109), December 31, 1995

(b)(1)



	Development	Approved	Current
b. (U) Quantity --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	81	74	74
Procurement	<u>1082</u>	<u>4568</u>	<u>4301</u>
Total	1163	4642	4375

c. (U) Foreign Military Sales/International Cooperative Programs -- TOMAHAWK

United Kingdom commitments are for 65 production submarine launched Tomahawk missiles and associated mission planning, weapons control systems and support efforts. AUR contract signed 31 Jan 96, concurrently with the FY96 Navy option.

(b)(1)



e. (U) References --

(U) Development Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

TOMAHAWK TBIP

	Development	Approved	Current
a. (U) Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	288.8	288.8	318.4
Procurement	544.2	544.2	548.5
Total Flyaway	(440.0)		(440.0)
Other Procurement Costs	(51.3)		(54.3)
Peculiar Support	(32.2)		(32.4)
Initial Spares	(20.7)		(21.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 77 Base-Year \$	833.0	833.0	866.9

TOMAHAWK (R/UGM-109), December 31, 1995

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

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1781.3	1781.3	1728.9
Development (RDT&E)	(456.9)	(456.9)	(483.1)
Procurement	(1324.4)	(1324.4)	(1245.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2614.3	2614.3	2595.8

b. (U) Quantity --

Development (RDT&E)	0	0	N/A
Procurement	<u>1181</u>	<u>1181</u>	<u>1181</u>
Total	1181	1181	1181

Note: Procurement quantities consist of re-manufacture of Block II missiles. 120 of these quantities are Low Rate Initial Production. Although slightly more than 10% of the procurement quantity, these LRIP units support two TBIP variants, the TMM and THTP.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated September 16, 1994.

12. (U) Unit Cost Summary:

TOMAHAWK

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (SEP 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY77\$)	5367.5	5537.6	
(2) Quantity	4375	4642	
(3) Unit Cost	1.227	1.193	2.84

TOMAHAWK (R/UGM-109), December 31, 1995

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

TOMAHAWK

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY77\$)	3988.0	4189.8	
(2) Quantity	4301	4568	
(3) Unit Cost	0.927	0.917	1.09

TOMAHAWK TBIP

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (SEP 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY77\$)	866.9	833.0	
(2) Quantity	1181	1181	
(3) Unit Cost	0.734	0.705	4.07
b. (U) Procurement			
(1) Cost (BY77\$)	548.5	544.2	
(2) Quantity	1181	1181	
(3) Unit Cost	0.464	0.461	0.79

TOMAHAWK (R/UGM-109), December 31, 1995

13. (U) Cost Variance Analysis:
TOMAHAWK

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	866.1	1556.8	0.0	2422.9
Previous Changes:				
Economic	-	-1696.0	+2.1	-1693.9
Quantity	-22.6	+8150.5	-	+8127.9
Schedule	+211.6	-90.9	-	+120.7
Engineering	+769.9	+1567.5	-	+2337.4
Estimating	+111.1	-2245.4	+73.6	-2060.7
Other	-	-	-	-
Support	+2.9	+2147.3	+0.5	+2150.7
Subtotal	+1072.9	+7833.0	+76.2	+8982.1
Current Changes:				
Economic	-2.3	-54.4	-0.7	-57.4
Quantity	-	-65.1	-	-65.1
Schedule	-	-26.7	-	-26.7
Engineering	-	-	-	-
Estimating	-6.8	-11.2	9.8	-8.2
Other	-	-	-	-
Support	-	3.7	-	+3.7
Subtotal	-9.1	-153.7	+9.1	-153.7
Total Changes	+1063.8	+7679.3	+85.3	+8828.4
Current Estimate	1929.9	9236.1	85.3	11251.3

TOMAHAWK (R/UGM-109), December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	782.8	1023.6	0.0	1806.4
Previous Changes:				
Quantity	-17.5	+2819.6	-	+2802.1
Schedule	+148.5	-310.1	-	-161.6
Engineering	+400.5	+620.8	-	+1021.3
Estimating	+29.5	-916.6	+31.7	-855.4
Other	-	-	-	-
Support	+2.1	+782.9	+0.4	+785.4
Subtotal	+563.1	+2996.6	+32.1	+3591.8
Current Changes:				
Quantity	-	-26.7	-	-26.7
Schedule	-	-5.6	-	-5.6
Engineering	-	-	-	-
Estimating	-2.7	-2.4	4.2	-0.9
Other	-	-	-	-
Support	-	2.5	-	+2.5
Subtotal	-2.7	-32.2	+4.2	-30.7
Total Changes	+560.4	+2964.4	+36.3	+3561.1
Current Estimate	1343.2	3988.0	36.3	5367.5

b. (U) Previous Change Explanations --

RDT&E

- Economic: Revised economic escalation indices. Economic adjustment for negative program change.
- Quantity: Reduction of 7 missiles.
- Schedule: Program delay to make design improvements, increase commonality, accelerate development of conventional land attack missile variant, and realign development of nuclear land attack. Theater Mission Planning Center IOC slip from FY90 to late FY91.
- Engineering: Design changes for commonality with the Ground Launch Cruise Missile. Complete Tomahawk baseline

TOMAHAWK (R/UGM-109), December 31, 1995

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

TOMAHAWK

program including BGM-109C. Implementation of program restructuring including additions such as Submunition Dispenser, Terminal Maneuver, Improved Booster, Nuclear Safety, specific Weapon System block upgrades, Theater Mission Planning Center Upgrades. Block IIIB Overrun. Program years add-on. Revised Integrated Strike Planning System Requirement. Congressional increase for engine. Hard Target Penetrator.

- Estimating:** Revised estimate to offset economic indices. Addition of Theater Mission Planning System development caused by program restructuring. Adjustment for current/prior inflation and travel (pro-rata share). Congressional Adjustment for TMPC and DBOF rate reduction. TMPCU/APS TSCM enhancements and SBIR.
- Support:** To fund the first surface ship fire control system trainer from RDT&E.

Procurement

- Economic:** Revised economic escalation indices. Economic adjustment for negative program change.
- Quantity:** Reduction of fire control systems for 33 ships and 52 submarines. Establish Procurement objective of 3994 missiles. Quantity change of 36 missiles. Deletion of 400 missiles in FY94 from total program. Addition of 200 missiles to the program. Addition of 278 missiles in FY92 as Desert Storm replacements and deletion of 60 nuclear missiles in FY92. Variance resulting from increase of 520 units from 4048 to 4568.
- Schedule:** Delay first procurement from FY80 and FY81. Rephasing of 689 missiles from FY85-87 to FY88-92 and the Congressionally mandated rephasing of FY84 TASH's. Missile procurement schedule slip for affordability issues. Accelerate procurement of 400 missiles from FY93 into FY91/92. Rephase procurement of 564 missiles from FY91/FY92 into FY93-FY95. Realignment associated with Quantity changes in FY91 and FY92. Changes in procurement buy schedule.
- Engineering:** Requirements to use Armored Boxed Launcher vice cannister launchers and production of 1,157 R/UGM-109D variants, vice R/UGM-109C versions. Remanufacturing program to Upgrade to Block III. Production incorporation of the -402 engine. Integrated Strike Planning system Costs for new

TOMAHAWK (R/UGM-109), December 31, 1995

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

TOMAHAWK

program requirements. Engineering variance resulting from quantity allocation.

Estimating: Congressionally mandated amortization of tooling and test equipment. Re-estimate of Quality Assurance requirements. Inclusion of both Systems Engineering/Integrating Agent and Principal Support Laboratory in FY85 and later years. Lower costs due to competition. Estimating reductions related to competitive contract awards and repricing. Expected multi-year contract savings. Revised estimates of surface and submarine support equipment. FY89 competition savings. Reclassification of costs as inflation. Additional Non-recurring to support program stretch (FY93-FY97). New program year FY95/96/97 add-on for Weapon Control System Alts/Mods; Surface and Submarine System Engineering/Integrating Agents and special support equipment. DD1415 Reprogramming for Hurricane Hugo. Adjustments for miscellaneous non-technical items such as Defense Business Operations Fund relating to affordability issues. Additional 130 capsule launch systems. Theater Mission Planning Center Support reestimate. Afloat Planning System costs associated with new program requirements. Costs associated with additional Weapon Control System. Deferral of installation costs. Navy Below-Threshold-Reprogrammings related to affordability issues. Revised estimates of surface support costs. Reestimation of FY91 and FY92 requirements required by Quantity and Schedule changes. Adjustment for current/prior inflation and pricing (pro-rata share). ILS Integrator savings. Installation Annualization. Transfer Warfare/Eng Centers. Economic procurement/Mods reprogramming, DBOF pricing and rate reduction, BSO realignment. Correction to align flyaway and support costs. Deletion of modification end item.

Support: Support equipment and initial spares associated with missile quantity changes. Schedule rephasing of associated missile support equipment, spares and Common Weapon Control System (CWCS) spares. Transfer of Theater Mission Planning Center (TMPC) support requirements from missile flyaway. Deletion of one AN/SWG-3. Reduction for initial spares. Peculiar Support equipment reestimate. Initial spares reestimate to support increased

TOMAHAWK (R/UGM-109), December 31, 1995

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

quantity and rephased procurement. Revised fleet support and spares requirements. Adjustment for current and prior inflation. Correction to align flyaway and support costs.

MILCON

Economic: Revised economic escalation indices.
Estimating: Economic Adjustment. Additional missile magazines. Revised project estimates. Adjustment for current and prior inflation.
Support: Revised project estimates.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.6
Revised Economic Assumptions (Estimating)	-2.9	-7.4
RDT&E Subtotal	<u>-2.7</u>	<u>-9.1</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-54.9
Economic adjustment for negative program change. (Economic)	N/A	+0.5
Quantity decrease of 64 units from 4365 to 4301 (Quantity)	-26.7	-65.1
Transfer of 57 missiles from FY96 to FY95 (Schedule)	-5.6	-26.7
Two additional years of Block III Remanufactures (WPN) (FY99 & 00) (Estimating)	+5.8	+16.8
Estimating change to reflect the true unit cost of the 64 missile reduction (Estimating)	+12.4	+35.7
Net effect of various budget adjustments including Bosnia, DBOF carryover adjustments and others (Estimating)	-20.6	-63.7

TOMAHAWK (R/UGM-109), December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Net effect of various budget adjustments (Support)	+2.5	+3.7
Procurement Subtotal	<u>-32.2</u>	<u>-153.7</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.7
Additional Missile Magazine Storage (Estimating)	+4.2	+9.8
MILCON Subtotal	<u>+4.2</u>	<u>+9.1</u>

TOMAHAWK (R/UGM-109), December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	745.7	1868.6	0.0	2614.3
Previous Changes:				
Economic	-3.7	-14.6	-	-18.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3.7	-11.5	-	-7.8
Other	-	-	-	-
Support	-	-9.5	-	-9.5
Subtotal	-	-35.6	-	-35.6
Current Changes:				
Economic	-27.7	-129.4	-	-157.1
Quantity	-	-	-	-
Schedule	83.5	52.0	-	+135.5
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	38.7	-	+38.7
Subtotal	+55.8	-38.7	-	+17.1
Total Changes	+55.8	-74.3	-	-18.5
Current Estimate	801.5	1794.3	-	2595.8

TOMAHAWK (R/UGM-109), December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	288.8	544.2	0.0	833.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.9	-3.0	-	-3.9
Other	-	-	-	-
Support	-	-8.4	-	-8.4
Subtotal	-0.9	-11.4	-	-12.3
Current Changes:				
Quantity	-	-	-	-
Schedule	30.5	3.0	-	+33.5
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	12.7	-	+12.7
Subtotal	+30.5	+15.7	-	+46.2
Total Changes	+29.6	+4.3	-	+33.9
Current Estimate	318.4	548.5	-	866.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: Revised estimates to delete modification end item. Adjustment for current and prior inflation and increased estimates to reflect revised escalation indices.

Support: Decreased estimates to reflect revised inflation indices in support costs.

TOMAHAWK (R/UGM-109), December 31, 1995

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

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-27.7
15 month schedule slip to the development program (Schedule)	+30.5	+83.5
RDT&E Subtotal	<u>+30.5</u>	<u>+55.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-129.4
Stretch out of annual procurement buy profile (Schedule)	+3.0	+52.0
Increased estimates to reflect revised inflation indices in support costs (Support)	+12.7	+38.7
Procurement Subtotal	<u>+15.7</u>	<u>-38.7</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

TOMAHAWK

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes									PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total		
2.083	-0.400	0.315	0.021	0.534	-0.473	--	0.492	0.489	2.572	

TOMAHAWK TBIP

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes									PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total		
2.214	-0.149	--	0.115	--	-0.007	--	0.025	-0.016	2.198	

TOMAHAWK (R/UGM-109), December 31, 1995

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

a. (U) Procurement --
 (U) FY94 AUR:
 Hughes Missile Systems Co, Tucson, AZ
 N00019-94-C-0257, FFP
 Award: September 16, 1994
 Definitized: September 16, 1994

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$130.3	N/A	216	

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

Explanation of Change:

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

(U) FY94 TBIP:
 Hughes Missile Systems Co, Tucson, AZ
 N00019-94-C-0258, CPIF/AF
 Award: September 16, 1994
 Definitized: September 16, 1994

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$226.5	N/A	0	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$226.5	N/A	0	\$298.9	\$318.5

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

Explanation of Change:

This is the first time contract variance data is reported in the SAR.

(U) FY95 AUR:
 Hughes Missile Systems Co, Tucson, AZ
 N00019-94-C-0257, FFP
 Award: January 20, 1995
 Definitized: January 20, 1995

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$140.0	N/A	120	

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

TOMAHAWK (R/UGM-109), December 31, 1995

15. (U) Contract Information (Cont'd):
Explanation of Change:

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

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

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

Explanation of Change:

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

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

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 71.9% (23 yrs/32 yrs)
- (2) Percent Program Cost Appropriated: 78.8% (\$10911.3 / \$13847.1)

TOMAHAWK

- (1) Percent Program Completed: 82.1% (23 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 94.8% (\$10671.6 / \$11251.3)

TOMAHAWK TBIP

- (1) Percent Program Completed: 25.0% (3 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 9.2% (\$239.7 / \$2595.8)

TOMAHAWK (R/UGM-109), December 31, 1995

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

Total Program

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program <u>Appropriation</u>	<u>Prior Years</u> (FY74-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	1962.9	164.7	136.4	467.4	2731.4
Procurement	8533.6	179.6	172.7	2144.5	11030.4
MILCON	54.2	16.3	6.0	8.8	85.3
O&M	-	-	-	-	-
Total	10550.7	360.6	315.1	2620.7	13847.1

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

TOMAHAWK <u>Appropriation</u>	<u>Prior Years</u> (FY74-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	1868.3	19.6	17.6	24.4	1929.9
Procurement	8533.6	179.6	165.2	357.7	9236.1
MILCON	54.2	16.3	6.0	8.8	85.3
O&M	-	-	-	-	-
Total	10456.1	215.5	188.8	390.9	11251.3

TOMAHAWK (R/UGM-109), December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

TOMAHAWK TBIP

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	94.6	145.1	118.8	443.0	801.5
Procurement	-	-	7.5	1786.8	1794.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	94.6	145.1	126.3	2229.8	2595.8

c. (U) Annual Summary -- TOMAHAWK

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY77 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

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

1974				7.9	6.6	6.6	6.6	8.0
1975				40.9	37.3	37.3	37.3	10.9
1976				135.1	130.6	130.6	130.6	6.6
1977				115.3	119.2	119.2	119.2	2.6
1978				188.1	209.5	209.5	209.5	6.8
1979				125.3	154.1	154.1	154.1	8.4
1980				77.5	105.4	105.4	105.4	10.6
1981				90.2	133.8	133.8	133.8	10.6

TOMAHAWK (R/UGM-109), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1982				92.4	144.3	144.3	144.3	7.6
1983				72.6	118.4	118.4	118.4	4.9
1984				79.9	135.0	135.0	135.0	3.8
1985				46.2	80.5	80.5	80.5	3.4
1986				41.2	73.9	73.9	73.9	2.8
1987				41.6	76.8	76.8	76.3	2.7
1988				36.4	69.5	69.3	66.8	3.0
1989				28.5	56.7	56.3	55.9	4.2
1990				23.2	48.0	47.9	47.8	4.0
1991				21.2	45.4	45.3	44.3	4.3
1992				27.5	60.7	60.7	60.7	2.8
1993				13.6	30.6	30.6	29.5	2.7
1994				8.7	20.0	20.0	20.0	2.0
1995				5.1	12.0	12.0	10.5	1.9
1996				8.2	19.6	16.4	2.0	2.0
1997				7.2	17.6			2.2
1998				2.5	6.3			2.2
1999				3.7	9.6			2.3

TOMAHAWK (R/UGM-109), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000				1.7	4.5			2.2
2001				1.5	4.0			2.2
Subtot	74			1343.2	1929.9	1883.9	1862.4	

Appropriation: 1507 Weapons Procurement, Navy

1980	6	1.6	13.5	22.5	34.6	34.6	34.6	11.8
1981	50	13.8	69.7	100.1	171.7	171.7	171.7	11.6
1982	61	15.5	89.6	119.0	221.6	221.6	221.6	14.3
1983	51	14.1	84.0	111.2	218.9	218.9	218.9	9.0
1984	124	20.2	121.4	167.6	343.3	343.3	343.2	8.0
1985	180	32.2	192.7	266.2	561.2	561.2	561.2	3.4
1986	249	34.0	219.2	315.9	689.0	689.0	689.0	2.8
1987	324	44.7	233.3	323.7	731.6	731.6	722.4	2.7
1988	475	43.2	278.5	361.0	847.9	843.0	843.0	3.0
1989	510	50.9	241.4	280.8	685.4	685.4	674.8	4.2
1990	400	49.8	195.5	237.9	600.8	600.4	589.8	4.0
1991	678	37.4	351.7	414.4	1073.0	1072.4	1069.6	4.3
1992	176	23.0	104.6	161.5	428.9	428.2	418.9	2.8

TOMAHAWK (R/UGM-109), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1993	200	16.1	110.1	157.4	425.8	425.6	418.9	2.7
1994	216	17.9	60.9	89.3	247.0	241.8	163.6	2.0
1995	274	23.0	69.7	94.9	267.8	245.0	72.8	1.9
1996	107	12.7	24.7	40.6	117.1	101.5	2.8	2.0
1997	120	3.9	24.9	32.6	96.0			2.2
1998	100	11.0	14.6	27.7	83.4			2.2
1999				5.0	15.4			2.3
2000				0.4	1.4			2.2
Subtot	4301	465.0	2500.0	3329.7	7861.8	7615.2	7216.8	

Appropriation: 1810 Other Procurement, Navy

1981				22.3	35.0	35.0	35.0	10.6
1982				36.8	60.4	60.4	60.4	7.6
1983				72.7	123.7	123.7	123.7	4.9
1984				35.0	61.4	61.4	61.4	3.8
1985				44.2	79.8	79.8	78.9	3.4
1986				56.0	104.6	104.6	104.6	2.8
1987				54.6	105.7	105.7	104.2	2.7

TOMAHAWK (R/UGM-109), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1988				26.8	54.3	54.1	54.1	3.0
1989				17.5	36.8	36.7	36.2	4.2
1990				25.5	55.3	55.2	54.5	4.0
1991				10.7	23.6	23.6	23.6	4.3
1992				26.2	59.7	59.6	58.0	2.8
1993				26.2	60.3	60.3	59.2	2.7
1994				21.8	50.9	48.6	39.9	2.0
1995				30.8	73.6	65.8	24.4	1.9
1996				25.6	62.5	21.5	2.0	2.0
1997				27.8	69.2			2.2
1998				21.2	54.1			2.2
1999				27.6	72.0			2.3
2000				29.6	78.7			2.2
2001				19.4	52.7			2.2
Subtot				658.3	1374.3	996.0	920.1	

TOMAHAWK (R/UGM-109), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1205 Military Construction, Navy

1982				0.3	0.5	0.5	0.5	7.6
1983								4.9
1984								3.8
1985								3.4
1986								2.8
1987				1.9	3.7	3.7	3.7	2.7
1988								3.0
1989				4.1	8.5	8.5	8.5	4.2
1990				2.1	4.6	4.6	1.6	4.0
1991				5.0	11.2	11.2	11.2	4.3
1992				8.2	18.8	18.8	18.8	2.8
1993								2.7
1994								2.0
1995				2.8	6.9	6.9		1.9
1996				6.4	16.3	3.9		2.0
1997				2.3	6.0			2.2
1998				3.2	8.8			2.2
Subtot				36.3	85.3	58.1	44.3	

TOMAHAWK (R/UGM-109), December 31, 1995

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

TOMAHAWK

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

Grand Total	4375	465.0	2500.0	5367.5	11251.3	10553.2	10043.6	
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c. (U) Annual Summary -- TOMAHAWK TBIP

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1994				10.3	23.6	23.6	19.1	2.0
1995				30.3	71.0	71.0	55.7	1.9
1996				60.6	145.1	82.8	7.5	2.0
1997				48.5	118.8			2.2
1998				45.2	113.2			2.2
1999				29.7	76.0			2.3
2000				25.6	67.0			2.2
2001				16.9	45.3			2.2
2002				31.0	84.8			2.2
2003				20.3	56.7			2.2

TOMAHAWK (R/UGM-109), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
TOMAHAWK TBIP

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

Subtot				318.4	801.5	177.4	82.3	
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Appropriation: 1507 Weapons Procurement, Navy

1998	50	4.8	18.6	26.0	78.4			2.2
1999	50	4.6	17.9	27.0	83.2			2.3
2000	54	4.8	18.4	26.5	82.7			2.2
2001	60	5.1	19.5	29.2	94.1			2.2
2002	200	15.8	61.1	85.6	281.6			2.2
2003	256	19.1	73.8	103.4	347.5			2.2
2004	256	18.3	70.7	99.1	340.6			2.2
2005	255	18.0	69.5	97.4	341.9			2.2
Subtot	1181	90.5	349.5	494.2	1650.0			

Appropriation: 1810 Other Procurement, Navy

1997				3.0	7.5			2.2
1998				8.4	21.5			2.2
1999				14.2	37.0			2.3
2000				8.9	23.8			2.2

TOMAHAWK (R/UGM-109), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
TOMAHAWK TBIP

Fiscal Year	Qty	Flyaway FY77 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

2001				7.6	20.7			2.2
2002				12.2	33.8			2.2
Subtot				54.3	144.3			
Grand Total	1181	90.5	349.5	866.9	2595.8	177.4	82.3	

17. (U) Production Rate Data:

TOMAHAWK

- a. (U) Deliveries to Date --
- | | |
|-------------|--------------------|
| RDT&E | <u>Plan/Actual</u> |
| Procurement | 74/74 |
| | 3485/3510 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

TOMAHAWK TBIP

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

TOMAHAWK

- a. (U) Assumptions and Ground Rules --

The Operating and Support costs are based on annual averages derived from a thirteen year period from FY89 through FY01.

The operational concept is a "Wooden round" which does not undergo maintenance except at the depot level. This maintenance cycle is

TOMAHAWK (R/UGM-109), December 31, 1995

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

TOMAHAWK

known as a recertification and includes examination and replacement of time limited components. The recertifications peak at an average 355 per year in FY99 through FY01.

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

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

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

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

Platform maintenance is included for Tomahawk launch platforms at an approximate level of 134 platforms per year.

There is no antecedent system.

TOMAHAWK (R/UGM-109), December 31, 1995

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

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

Cost Element	Avg Annual Cost Per Total system	Avg Annual Cost Per N/A
Operational Test Launch	7.6	N/A
Depot Maintenance	15.1	N/A
Software Support Program	5.5	N/A
Technical/Ops Support	6.6	N/A
Platform Maintenance	1.2	N/A
Theater Mission Planning	6.1	N/A
Total	42.1	N/A

Costs reflect revised Program office estimates as of January 1996.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	32.6	2.2	2.2	11.0	48.0
Total	32.6	2.2	2.2	11.0	48.0

TOMAHAWK TBIP

a. (U) Assumptions and Ground Rules --

TBIP, as currently planned, will not increase the O&S costs of the Tomahawk system because there will be no net increase to inventory. TBIP assets will be remanufactured from older, existing Tomahawk missiles. There will be some decrease in Depot Maintenance costs because TBIP will have a ten year recertification interval. As currently planned, the first TBIP recertification would not occur

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TOMAHAWK (R/UGM-109), December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):
TOMAHAWK TBIP
until FY2009.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

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A-7 BLACKHAWK

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

PROGRAM: UH-60L BLACK HAWK

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

UH-60L BLACK HAWK

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Utility Helicopters Project Mgr. Off COL Chester Rees, Jr.
 ATTN: SFAE-AV-BH Assigned: June 1, 1993
 4300 Goodfellow Blvd AV 693-1700 COMM (314) 263-1700
 St. Louis, MO 63120-1798

4. Program Elements/Procurement Line Items:

PROCUREMENT:

- APPN 2031 ICN A05002 (Army)
- APPN 2031 ICN A09400 (Army)
- APPN 2031 ICN AA0005 (Army)
- APPN 2031 ICN AA0952 (Army)
- APPN 0350 ICN ----- (NGRE)

MILCON:

PE 22696, 22483, 22496, 85796

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DEPARTMENT OF DEFENSE

5. Related Programs:

Army's EH-60A QUICK FIX, MH-60K Special Operations BLACK HAWK, UH-60A/L Flight Simulator, and AH-64 APACHE programs; Navy's SH-60B SEAHAWK and SH-60F (CV-HELO) programs; and Air Force's MH-60G PAVE HAWK program.

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96-2-0447

UH-60L BLACK HAWK, December 31, 1995

6. Mission and Description:

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

7. Program Highlights:

a. Significant Historical Developments --

On June 22, 1971 the BLACK HAWK program was approved by the DEPSECDEF for full-scale development. On March 6, 1972 a contract to develop a 1500 shaft horsepower advanced technology engine was awarded to General Electric Company (GE). August 30, 1972 contracts were awarded to Boeing Vertol and Sikorsky Aircraft to develop the BLACK HAWK airframe. Prototype qualification testing commenced October 17, 1974 and was completed December 8, 1976. These tests accumulated 2,990 flight test hours and 2,676 ground vehicle test hours. The BLACK HAWK was approved for production as a result of Defense Systems Acquisition Review Council (DSARC) III, held on November 30, 1976. On December 23, 1976, Sikorsky Aircraft and GE were awarded initial production contracts for airframes and engines, respectively. October 22, 1979--Army Systems Acquisition Review Council (ASARC) IIIA was held, at which time permission was granted for follow-on BLACK HAWK production.

May 15, 1979--FY80 HASC report 96-166 directed the Army to perform a UH-60A HELLFIRE feasibility demonstration. The demonstration was integrated with Army requirements for the UH-60A BLACK HAWK to carry external stores, such as fuel tanks, to meet self deployment and extended range needs--the External Stores Support System (ESSS) program. May 20, 1982--the HELLFIRE feasibility demonstration was satisfactorily completed. July 1, 1983--Development Testing II (DT II) of the ESSS was successfully completed. September 23, 1983--Operational Test II (OT II) was successfully completed at Ft. Campbell, KY. The DOD FY84 Authorization and Appropriation Acts directed the Army to qualify the HELLFIRE missile system on the UH-60A, and appropriated \$15M to fund the program. Congress appropriated an additional \$15.8M in the DOD FY86 Appropriation Act to complete qualification of the HELLFIRE missile system on the UH-60A. DT II for the UH-60A HELLFIRE Missile System was completed in November, 1987. The HELLFIRE system is qualified on the UH-60A and a Technical Data Package (TDP) has been procured for any future UH-60A HELLFIRE system procurement requirements.

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UH-60L BLACK HAWK, December 31, 1995

7a. Program Highlights (Cont'd):

The multiyear III airframe contract for FY88-91 to procure 252 UH-60s was fully executed with an additional 36 UH-60Ls procured in FY91, bringing the total contract quantity procured to 288 UH-60's.

Congressional interest and subsequent funding in FY88 initiated an Army effort to develop an upgrade to the UH-60A, to include a composite rotor system, designated as the Multi-Stage Improvement Program (MSIP). Development of the MSIP was scheduled to conclude in 1992, with incorporation of the changes on the production line (no retrofit of the fielded fleet was planned). After development contracts had been negotiated, however, the program was terminated due to insufficient resources in the outyear procurement program.

The procurement objective for the UH-60 was increased from 1,107 to 2,253 in February, 1989, as stated in the Army Aviation Modernization Plan. The propulsion system for the UH-60 was changed from the T700-GE-700 to the T700-GE-701C in October, 1989, as the result of a competitive procurement of an engine with increased horsepower. With the incorporation of the T701C engine into the UH-60, the aircraft model designation was changed to the UH-60L. The significant improvement in performance of the UH-60L over the UH-60A eliminated all Material Need deficiencies except for the requirement for mission endurance.

An FY92-96 airframe multiyear contract for an additional 300 UH-60L aircraft was awarded in April, 1992. Congress split funding for the FY93 quantity of 60 aircraft between the Army (52 aircraft) and the National Guard (8 aircraft). Deliveries on this contract will conclude in June of 1997.

A new medical configuration was proposed to improve the medical care capability of the UH-60L. The new series was designated as the UH-60Q, and a program to modify a UH-60A to the UH-60Q configuration began during FY92 (Proof of Principle) utilizing UH-60 production funds.

b. Significant Developments Since Last Report --

Following the Congressional appropriation of \$70M of FY96 Advance Procurement funds for a follow on multiyear, the Army added funding to procure 172 aircraft on an FY97-01 multiyear contract. This will bring the total UH-60s procured (including 980 UH-60As) to 1,622--420 short of the total requirement.

The BLACK HAWK system is expected to satisfy the mission requirements.

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UH-60L BLACK HAWK, December 31, 1995

7c. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline (APB) dated July 12, 1993 and there are no Munn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Multiyear Airframe Contract Award (FY 88-91)	JAN 88	JAN 88	JAN 88
Multiyear Engine Contract Award (FY 89-93)	NOV 88	NOV 88	NOV 88
Approval of Revised UH-60 Procurement Objective (2253)	FEB 89	FEB 89	FEB 89
DA IPR for Type Class of UH-60L	SEP 89	SEP 89	SEP 89
Incorp of GE T701C Engine	OCT 89	OCT 89	OCT 89
Multiyear Airframe Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Engine Contract Award (FY90)	NOV 89	NOV 89	NOV 89
Multiyear Airframe Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Multiyear Engine Contract Award (FY91)	NOV 90	NOV 90	DEC 90
Deployment Plan			
TXNG -- Austin, TX	NOV 89	NOV 89	NOV 89
2/229 Aslt -- Ft Rucker	JAN 90	JAN 90	JAN 90
1/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
4/6th AHB -- Ft Hood	MAR 90	MAR 90	MAR 90
3rd ACR -- Ft Bliss	APR 90	APR 90	APR 90
3/6 AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
1/3rd AHB -- Ft Hood	MAY 90	MAY 90	MAY 90
C/25th Aslt -- Ft Drum	JUN 90	JUN 90	JUN 90
E/3 Aslt -- Ft Hood	JUN 90	JUN 90	JUN 90
1/4th AHB -- Ft Carson	JUL 90	JUL 90	JUL 90
1/5th AHB -- Ft Polk	SEP 90	SEP 90	SEP 90
SOCOM -- Ft Campbell, KY	N/A	AUG 90	AUG 90
2-82ns Aslt -- Ft Bragg, NC	N/A	DEC 90	DEC 90
E-149th Aslt TX ARNG -- Austin, TX	N/A	FEB 91	FEB 91
1-151st AHB SC ARNG -- Eastover, SC	N/A	MAR 91	MAR 91
1-111th AHB FL ARNG--Jacksonville, FL	N/A	APR 91	APR 91
1-207th Aslt AK ARNG--Ft Richardson, AK	N/A	MAY 91	MAY 91
MDW -- Ft Belvoir, VA	N/A	MAY 91	MAY 91
1-149th AHB TX ARNG -- Houston, TX	N/A	MAY 91	MAY 91

UH-60L BLACK HAWK, December 31, 1995

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
SOCOM -- Ft Campbell, KY	N/A	JUL 91	JUL 91
E-130th AVIM NC ARNG -- Salisbury, NC	N/A	APR 92	APR 92
E-131st AVIM AL ARNG -- Birmingham, AL	N/A	JUN 92	JUN 92
SOCOM -- Ft Campbell, KY	N/A	SEP 92	SEP 92
1-17th Cav -- Ft Bragg, NC	N/A	NOV 92	NOV 92
F-149th AVIM TX ARNG -- Austin TX	N/A	NOV 92	NOV 92
101st Abn Div -- Ft Campbell, KY	N/A	DEC 93	DEC 93
MY III Engine Contract Award (FY 92)	N/A	JAN 92	JAN 92
MY IV Airframe Contract Award (FY 92)	N/A	APR 92	APR 92
Deliveries MYC 92-96 Start	N/A	APR 92	APR 92
MY III Engine Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY IV Airframe Contract Award (FY 93)	N/A	NOV 92	NOV 92
MY III A/F Contract Deliveries Complete	N/A	SEP 93	JAN 94
MY IV Engine Contract Award (FY 94)	N/A	NOV 93	APR 94
MY IV Airframe Contract Award (FY 94)	N/A	NOV 93	JAN 94

b. Previous Change Explanations --

Changes to the milestones reflect the addition of events (deployments and contract awards) not included in the February 26, 1990 Acquisition Program Baseline, and the revision of contractual milestones to reflect the actual date of award, first delivery, and completion of deliveries.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

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

Approved Program:

AAE Approved Acquisition Program Baseline dated July 13, 1993.

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UH-60L BLACK HAWK, December 31, 1995

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Payload (lbs)					
Troops	11	11	/ 11	11	11
Pounds	2640	2640	/ 2640	2640	2640
Air Transportability (qty)					
C-141	N/A	2	/ 2	2	2
C-5	N/A	6	/ 6	6	6
Flight Performance with Payload					
Vertical Rate of Climb (ft/min)	785	900	/ 785	785	785
Cruise Speed (knots) (using max cont power)	150	152	/ 150	150	150
Endurance (hrs)	2.1	2.3	/ 2.1	2.1	2.1
Mission Reliability					
Probability of Success	N/A	.991	/ .987	.987	.987
Mean Time Between Maintenance Actions (hrs)	N/A	106.0	/ 75.9	75.9	75.9
System Mean Time Between Failures (hrs)	4.0	4.7	/ 4.0	4.0	4.0
Maintenance Manhours per Flight Hours (MMH/FH)	3.8	3.0	/ 3.8	3.8	3.8

Notes:

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

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

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

Endurance in Hours is based on using a mission profile.

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

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10a. Performance Characteristics (Cont'd):

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

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

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

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

Approved Program:

AAE Approved Acquisition Program Baseline dated July 13, 1993.

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

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	156.1	2257.8	1131.0
Airframe	(66.1)		(767.4)
Engine	(17.9)		(150.9)
Avionics	(11.9)		(29.2)
Other Flyaway	(15.5)		(70.0)
Total Flyaway	(111.4)		(1017.5)
Data	(2.9)		(16.9)
Training	(0.0)		(9.3)
Other	(0.0)		(33.6)
Total Other Wpn Sys	(2.9)		(59.8)
Peculiar Support	(5.9)		(2.4)
Initial Spares	(35.9)		(51.3)
Construction (MILCON)	0.0	2.7	2.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 71 Base-Year \$	156.1	2260.5	1133.7

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UH-60L BLACK HAWK, December 31, 1995

12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY71\$)	1131.0	2257.8	
(2) Quantity	642	1268	
(3) Unit Cost	1.762	1.781	-1.06

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	0.0	195.5	0.0	195.5
Previous Changes:				
Economic	-	+500.1	+0.7	+500.8
Quantity	-	+958.0	-	+958.0
Schedule	-	+181.0	-	+181.0
Engineering	-	+30.3	+27.5	+57.8
Estimating	-	+1123.8	-17.7	+1106.1
Other	-	+1.4	-	+1.4
Support	-	+253.2	-	+253.2
Subtotal	-	+3047.8	+10.5	+3058.3
Current Changes:				
Economic	-	-32.5	-0.4	-32.9
Quantity	-	601.6	-	+601.6
Schedule	-	-	-	-
Engineering	-	15.4	-	+15.4
Estimating	-	785.1	0.4	+785.5
Other	-	-	-	-
Support	-	155.2	-	+155.2
Subtotal	-	+1524.8	-	+1524.8
Total Changes	-	+4572.6	+10.5	+4583.1
Current Estimate	-	4768.1	10.5	4778.6

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

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	0.0	156.1	0.0	156.1
Previous Changes:				
Quantity	-	+264.8	-	+264.8
Schedule	-	-9.4	-	-9.4
Engineering	-	+4.4	+7.8	+12.2
Estimating	-	+347.2	-5.1	+342.1
Other	-	-	-	-
Support	-	+36.5	-	+36.5
Subtotal	-	+643.5	+2.7	+646.2
Current Changes:				
Quantity	-	127.7	-	+127.7
Schedule	-	-	-	-
Engineering	-	1.6	-	+1.6
Estimating	-	169.8	-	+169.8
Other	-	-	-	-
Support	-	32.3	-	+32.3
Subtotal	-	+331.4	-	+331.4
Total Changes	-	+974.9	+2.7	+977.6
Current Estimate	-	1131.0	2.7	1133.7

b. Previous Change Explanations --

Procurement

- Economic: Revised escalation indices.
- Quantity: Quantity increase from 127 to 470.
- Schedule: Impact of stretching out, contracting, and adding skip years to the production schedule.
- Engineering: More stringent requirements for protection against the electromagnetic environment (EME).
- Estimating: Higher than anticipated cost for the airframe and engine, procurement of a large number of mission flexibility kits, and addition of costs for production shutdown.
- Support: Stretch of production schedule; addition of requirements for flight simulators, PMO and matrix

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

support cost, and fielding; increased requirements for trainers; reduction in requirements for data, PGSE, and initial spares.

MILCON

Engineering: Revised number of flight simulator facilities allocated to the UH-60L BLACK HAWK.

Estimating: Revised cost of flight simulator facilities.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) Procurement		
Revised escalation indices. (Economic)	N/A	-32.5
Adjustment for current and prior inflation. (Estimating)	+6.4	+28.1
Total variance associated with quantity increase of 172 units from 470 to 642.	+252.2	+1188.3
Quantity variance resulting from increase of 172 units. (Quantity)	+127.7	+601.6
Engineering allocation resulting from quantity increase. (Engineering)	+1.6	+15.4
Estimating allocation resulting from quantity increase. (Estimating)	+122.9	+571.3
Reduced GFE requirements based on an audit of assets on hand (Estimating)	-2.0	-8.5
Reduced estimates for Engineering Change Orders (Estimating)	-1.6	-6.0
Increased cost of added procurement quantity, based on incorporation of airframe changes and production at a lower production rate. (Estimating)	+44.1	+200.2
Adjustment for current and prior inflation. (Support)	+0.8	+3.8
Increased estimate for Initial Spares due to quantity increase. (Support)	+3.9	+21.7
Increased estimate for support equipment due to increased quantity. (Support)	+0.5	+2.3
Revised estimate for PM Administration, Matrix Support, and Fielding due to quantity increase and extension of the procurement program. (Support)	+18.2	+86.3
Revised estimate for data requirements due to quantity increase. (Support)	+7.2	+34.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate for training devices. (Support)	+1.7	+6.9
Procurement Subtotal	<u>+331.4</u>	<u>+1524.8</u>
 (2) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.4
Adjustment for Current and Prior Inflation. (Estimating)	--	+0.4
MILCON Subtotal	<u>--</u>	<u>--</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.539	0.729	1.195	0.282	0.114	2.946	0.002	0.636	5.904	7.443

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

a. Procurement --			Initial Contract Price		
<u>Airframe MYC IV (FY92-96):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
United Technologies Corp., Stratford, CT			\$1539.4	N/A	300
DAAJ09-92-C-A004, FFP					
Award: April 28, 1992					
Definitized: April 28, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1640.5	N/A	320	\$1640.5	\$1640.5	

Explanation of Change:

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

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15. Contract Information (Cont'd):

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

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$177.0	N/A	315	\$177.0	\$177.0

Explanation of Change:

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

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

a. Program Status --

- (1) Percent Program Completed: 66.7% (10 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 68.2% (\$3257.7 / \$4778.6)

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

<u>Appropriation</u>	<u>Prior Years</u> (FY87-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	2841.4	405.8	244.4	1276.5	4768.1
MILCON	3.5	7.0	-	-	10.5
O&M	-	-	-	-	-
Total	2844.9	412.8	244.4	1276.5	4778.6

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

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY71 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2031 Aircraft Procurement, Army

1987				0.6	1.7	1.7	1.7	0.2
1988				34.7	115.8	115.6	115.1	7.6
1989	23	2.2	39.9	91.5	336.8	336.5	334.4	10.8
1990	72	0.5	98.7	107.2	409.0	409.0	405.1	4.1
1991	48	3.8	68.6	40.8	160.7	160.1	137.4	4.3
1992	60	1.6	97.2	124.5	502.4	502.4	463.3	3.0
1993	52	2.3	71.6	86.5	356.5	354.3	299.1	2.4
1994	63	0.1	92.8	102.0	428.6	428.6	295.8	2.0
1995	60	1.3	88.9	74.1	317.9	298.3	104.9	1.9
1996	60	0.8	89.8	92.5	405.8	6.2	0.4	2.0
1997	36		46.6	54.4	244.4			2.2
1998	28		64.2	73.0	335.3			2.2
1999	36		64.2	71.9	337.4			2.3
2000	36		63.6	69.4	335.8			2.2
2001	36	3.4	62.2	54.7	268.0			2.2
Subtot	610	16.0	948.3	1077.8	4556.1	2612.7	2157.2	

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

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UH-60L BLACK HAWK, December 31, 1995

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

significantly greater than the advance procurement funding for future years.

Appropriation: 2050 Military Construction, Army

1995				0.9	3.5	3.5	0.5	1.9
1996				1.8	7.0			2.0
Subtot				2.7	10.5	3.5	0.5	
Army	610	16.0	948.3	1080.5	4566.6	2616.2	2157.7	

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1991	24		39.6	39.6	156.0	156.0	135.4	4.3
1992								3.0
1993	8		13.6	13.6	56.0	56.0	52.8	2.4
Subtot	32		53.2	53.2	212.0	212.0	188.2	
DoD	32		53.2	53.2	212.0	212.0	188.2	
Grand Total	642	16.0	1001.5	1133.7	4778.6	2828.2	2345.9	

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	0/0
Procurement	380/380

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17b. Production Rate Data (Cont'd):

b. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development <u>Estimate</u>	Current <u>Estimate</u>	Latest Approved <u>Threshold</u>
@ Qty 1107 - @ Peak Rate: 17.0/mo			
FY 72 Base-Year \$	0.951	1.577	0.000
Then Year \$	1.089	6.465	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 72 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

An airframe DTC goal of \$600K (FY72C\$) was established at Milestone II for the UH-60. A system DTC goal of \$951K (FY72C\$) was established between Milestone II and Milestone III. In neither case, however, were thresholds established. A type classification IPR for the UH-60L was held in September, 1989 without the establishment of a DTC goal or threshold.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

UH-60L cost estimates are based on a flying hour rate of 18.2 hours per aircraft per month, with aircraft deployed in three representative units--a Combat Aviation Company, an Air Cavalry Troop (Air Cavalry Squadron), and a Medical Evacuation Company. Personnel cost includes the Pay and Allowances and Permanent Change of Station (MPA appropriation) for crew, maintenance, and support personnel attributable to the UH-60A/L BLACK HAWK in the aforementioned units. Consumption includes the cost of replenishment spares and repair parts, war reserve spares and repair parts, and petroleum, oil, and lubricants (POL). Depot maintenance includes the cost of labor, material, and transportation associated with the end item as well as component repair programs. Material modifications reflect the estimated hardware cost of aircraft changes installed after fielding. Other direct costs include the cost of civilian maintenance on the flight simulators, as well as the application of modifications with OLR teams. Other indirect costs include the cost of replacement training for military personnel, as well as the cost of quarters, maintenance, and utilities. The source of the O&S estimate is the Baseline Cost Estimate (BCE) dated July 1991. Assumptions and ground rules for the UH-1 (antecedent system) are the same as for the UH-60, except for a flying hour rate of 20 hours per aircraft per month and that the flight simulator maintenance as well as modification application are completed by military personnel.

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UH-60L BLACK HAWK, December 31, 1995

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

Source of the estimate is a 1987 study.

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

Cost Element	Avg Annual Cost Per 1,000 Flying Hours UH-60L BLACK HAWK	Avg Annual Cost Per 1,000 Flying Hours UH-1 Iroquois
Personnel	463.5	355.7
Consumption	240.6	130.2
Depot Maintenance	24.9	135.5
Modifications--Material	25.2	19.4
Other Direct Cost	80.1	0.0
Other Indirect Cost	95.7	153.9
Total	930.0	794.7

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Int. Contractor Supp	---	---	---	---	---
Contractor Log. Spt.	---	---	---	---	---
Sust. Engineering	0.1	0.1	0.1	---	0.3
Depot Maintenance	17.3	9.7	7.2	---	34.2
Contract Eng/Tec Srv	1.8	1.0	1.0	---	3.8
Other	2.5	1.4	0.8	---	4.7
Total	21.7	12.2	9.1	---	43.0

Sustaining Engineering: DA/AMC directed initiative to assure the application of RCM logic to requirements.

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UH-60L BLACK HAWK, December 31, 1995

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

Depot Maintenance: Project to incorporate RCM strategy into the depot program which will provide the depot with the depth of work required to overhaul/repair only those items/components requiring it.

Contract Eng/Tech Serv: T700 engine engineering services necessary to provide timely and accurate resolution of problems with fielded UH-60's utilizing the T700 engine. Full up engineering.

Other: Program directly affects sustainment and update of Army Aviation maintenance, equipment design, operational readiness, and safety. Army oil analysis, deficiency reporting, and sample data collection, COSIS, ACE/OCM, and DMWR verification.

Costs shown are for both the UH-60A and the UH-60L.

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CVN-68 Class, December 31, 1995

5. (U) Related Programs: None.

6. (U) Mission and Description:

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

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Construction of the CVN 68 Class aircraft carriers began in October 1967 with the start of the NIMITZ (CVN 68). To date six ships have been delivered. The USS NIMITZ (CVN 68), USS DWIGHT D. EISENHOWER (CVN 69), USS CARL VINSON (CVN 70), USS THEODORE ROOSEVELT (CVN 71), USS ABRAHAM LINCOLN (CVN 72), USS GEORGE WASHINGTON (CVN 73), and USS JOHN C. STENNIS (CVN 74) were delivered in 1975, 1977, 1982, 1986, 1989, 1992 and 1995 respectively. There are two ships currently under construction at Newport News Shipbuilding the HARRY S. TRUMAN (CVN 75) and the RONALD REAGAN (CVN 76). CVN 75 construction began in April 1989 and the keel was laid on 29 November 1993. Contract delivery date is June 1998. CVN 76 is scheduled for delivery in December 2002.

b. (U) Significant Developments Since Last Report -- None.

c. (U) Changes Since As Of Date --

There have been no changes since the "as of" date.

8. (U) Threshold Breaches:

The CVN 77 Acquisition Program Baseline (ABP) Procurement Cost dated June 25, 1993 has been breached. The breach was partially due to a increase in base year cost to offset decreased inflation indices. Also, the shipbuilding cost estimate increased due to a production break, an accelerated delivery date, and decreased shipyard manning. A Program Deviation Report and a Baseline Change Request will be submitted. There are no Nunn-McCurdy unit cost breaches.

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CVN-68 Class, December 31, 1995

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

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
CVN-74			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 88	OCT 88
Lay Keel	OCT 91	DEC 90	MAR 91
Launch	JAN 94	DEC 93	NOV 93
Target Delivery	N/A	DEC 95	NOV 95 (Ch-1)
Contract Delivery	SEP 96	JUN 96	JUN 96
CVN-75			
Definitization of Contract	AUG 88	JUN 88	JUN 88
Start Production	JAN 89	NOV 89	APR 89
Lay Keel	APR 93	NOV 93	NOV 93
Launch	JUL 96	SEP 96	SEP 96
Delivery	SEP 97	JUN 98	JUN 98

b. (U) Previous Change Explanations --

CVN-74/75 dates reflect schedule IAW contract award on 6/30/88. CVN 74 actual start production date was October 1988 vice November 1988. CVN 74 keel laying was shifted from December 1990 to March 1991 at the request of the shipbuilder. CVN 75 actual start production date was changed from November 1989 to April 1989. The CVN 75 keel laying date was changed to November 1993 (from August 1992) and CVN 75 launching to September 1996 (from December 1995). This was made as a result of lessons learned on the CVN 72/73 and will result in improved construction efficiency. The contract delivery date of 30 June 1998 will not be affected. The CVN 74 launch date was changed from December 1993 to November 1993 to make it concurrent with the CVN 75 keel laying where the shipbuilder laid the keel of CVN 75 in the same drydock after the CVN 74 was launched.

c. (U) Current Change Explanations --

(Ch-1) The CVN 74 delivered 9 November 1995 vice December 1995.

d. (U) References --

(U) Production Estimate:
FY 1988 President's Budget

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

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CVN-68 Class, December 31, 1995

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

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
CVN-76			
Contract Award	JUN 95	JUN 95	DEC 94
Start Production	NOV 95	NOV 95	MAY 95 (Ch-2)
Lay Keel	DEC 97	DEC 97	FEB 98 (Ch-3)
Launch	DEC 00	DEC 00	MAR 00 (Ch-3)
Delivery	DEC 02	DEC 02	DEC 02

b. (U) Previous Change Explanations --

Revised the date for ship award from June 1995 to December 1994.

c. (U) Current Change Explanations --

(Ch-2) Actual Start Production was May 95 vice November 1995.
(Ch-3) The Lay Keel and Launch dates of December 1997 and December 2000, respectively, were changed to the shipbuilder provided dates of February 1998 and March 2000.

d. (U) References --

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

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-77

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
CVN 77			
Definitization of Contracts	DEC 00	JUN 01	DEC 01
Start Production	NOV 01	NOV 01	MAR 02 (Ch-4)
Lay Keel	DEC 03	DEC 03	MAR 03 (Ch-4)
Launch	DEC 06	DEC 06	MAR 06 (Ch-4)
Delivery	DEC 08	DEC 08	JAN 08 (Ch-4)

b. (U) Previous Change Explanations --

The full funding for CVN 77 is planned for FY 2002 vice FY 2001.

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

c. (U) Current Change Explanations --

(Ch-4) The required delivery has been accelerated from December 2009 to January 2008 to support operational requirements due to the decommissioning of the USS Constellation (CV-64). Start Production, Lay Keel, and Launch dates reflect a notional schedule supporting the January 2008 delivery.

d. (U) References --

(U) Production Estimate:

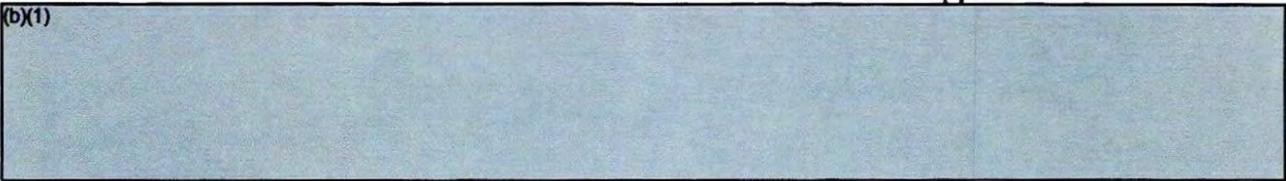
FY 1994 President's Budget dated April 08, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 25, 1993.

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

a. (U) Performance --	PdE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
Length Overall	1092	1092	/ 1092	1092	1092
Beam	134	134	/ 134	134	134
Maximum Width	252	252	/ 252	252	252
Draft (Combat Load) (ft)	38.4	39.0	/ 40.4	40.4	38.9
Displacement (tons)	96300	99000	/ 102500	102500	97337



Stores (days)	75	75	/ 75	75	75
Close In Weapon Systems	4	4	/ 4	4	4
NATO Sea Sparrow Missile Systems	3	3	/ 3	3	3
Aviation Strike Ordnance (long tons)	2400	2400	/ 2400	2451	2451



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CVN-68 Class, December 31, 1995

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

	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Operational Number of Aircraft (deck multiple in A4 Equivalentents)	151	151 / 151	151 3/	151
Core Life (yrs)	13	N/A / N/A	-- 2/	20
Number of Reactors	2	N/A / N/A	2	2
Crew (Including Air Wing)	6280	N/A / N/A	6040	6048

- 1/ Actual based on CVN 68 Class standardization trials.
2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.
3/ The operational number of aircraft (deck multiple) in A7 equivalentents is 156.

b. (U) Previous Change Explanations --

CVN 74/75 projected crew size at delivery was reduced from 6,280 to 6,048 to reflect 122 accommodations which have been converted to training spaces and 110 accommodations were deleted to accommodate the Versatile Avionics System Test (VAST) equipment. The draft was changed from 38.4 to 38.9 and the displacement was changed from 96,300 to 97,337 to reflect re-evaluated torpedo side protection requirements. This re-evaluation permits an increase in draft and displacement limits while still obtaining the same torpedo side protection capability. Based on demonstrated performance on CVN-68 the core life was increased from 15 years to 20 years.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:
FY 1988 President's Budget

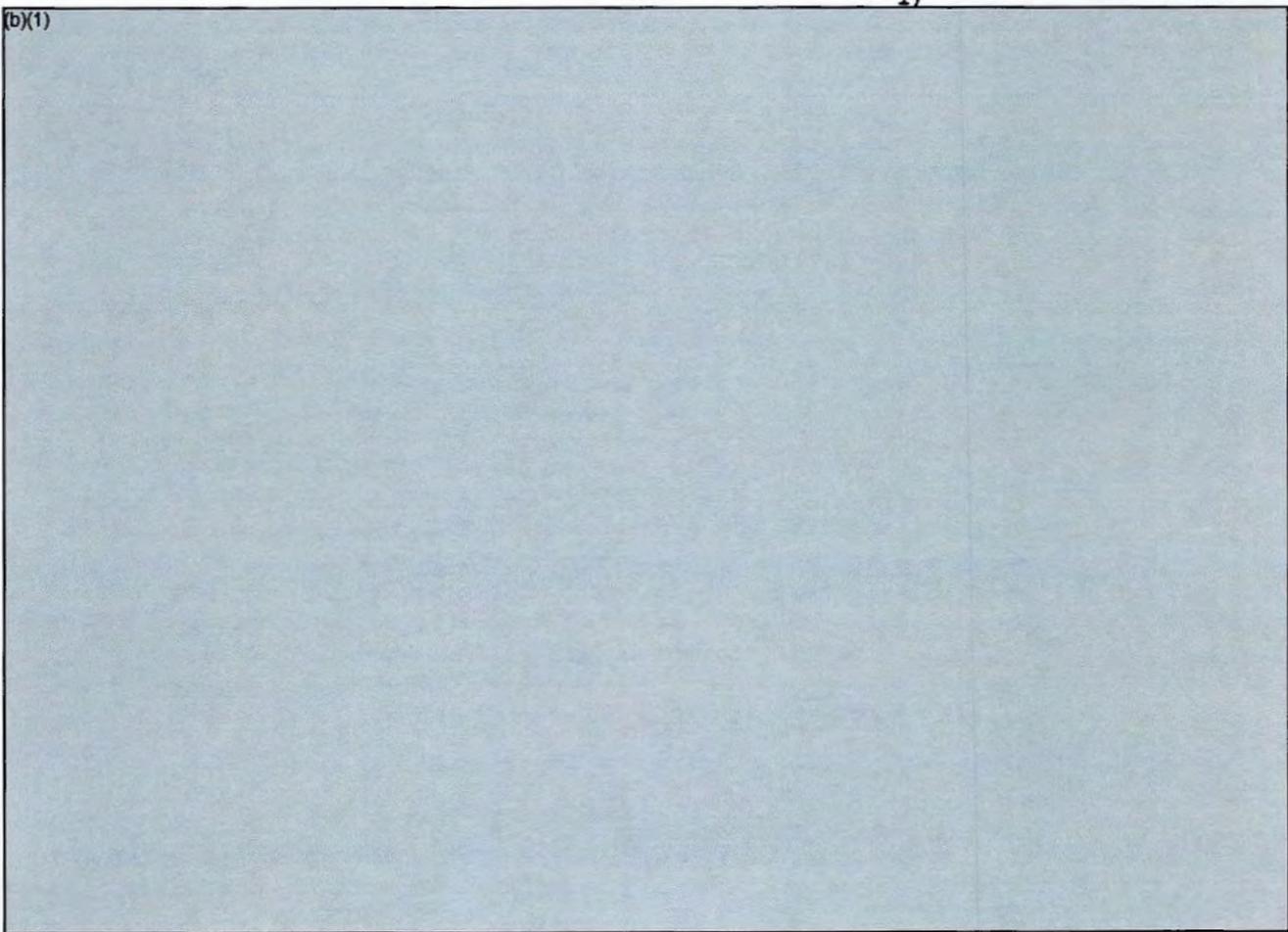
(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

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

a. (U) Performance --	PdE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
Length Overall	1092	1092	/ 1092	1092	1092
Beam	134	134	/ 134	134	134
Maximum Width	252	252	/ 252	252	252
Draft (Combat Load) (ft)	38.4	39.0	/ 40.4	40.4	38.9
Displacement (tons)	96300	99000	/ 102500	102500	97337

(b)(1)



b. (U) Previous Change Explanations --

CVN 76 projected crew size at delivery was reduced from 6,280 to 6,048 to reflect 122 accommodations which have been converted to training spaces and 110 accommodations were deleted to accommodate

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

the Versatile Avionics System Test (VAST) equipment. The draft was changed from 38.4 to 38.9 and the displacement was changed from 96,300 to 97,337 to reflect re-evaluated torpedo side protection requirements. This re-evaluation permits an increase in draft and displacement limits while still obtaining the same torpedo side protection capability. Based on demonstrated performance on CVN-68 the core life was increased from 15 years to 20 years.

c. (U) Current Change Explanations -- None.

d. (U) References --

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

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-77

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Length Overall	1092	1092 / 1092	1092	1092
Beam	134	134 / 134	134	134
Maximum Width	252	252 / 252	252	252
Draft (Combat Load) (ft)	40.4	39.0 / 40.4	40.4	40.4
Displacement (tons)	97337	99000 / 102500	102500 1/	97337
Propulsion	Nuclear	Nuclear / Nuclear	Nuclear	Nuclear

(b)(1)

CVN-68 Class, December 31, 1995

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

	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Core Life (yrs)	15	N/A	/ N/A	-- 2/	20
Number of Reactors	2	N/A	/ N/A	2	2
Crew (Including Air Wing)	6048	N/A	/ N/A	6040	6048

- 1/ Actual based on CVN 68 Class standardization trials.
- 2/ Requires extensive operational data and is dependent on actual core life. The USS NIMITZ, the first CVN 68 class ship, was delivered in 1975 and will not be refueled until 1998.
- 3/ The operational number of aircraft (deck multiple) in A7 equivalents is 156.

b. (U) Previous Change Explanations --

Based on demonstrated performance on CVN-68 the core life was increased from 15 years to 20 years.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 25, 1993.

CVN-68 Class, December 31, 1995

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

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	5911.0	6528.4	6509.9
Basic	(3744.9)		(4163.8)
Government Furnished Equipment	(1998.1)		(2221.4)
Other Costs	(28.1)		(31.4)
OF/PD	(139.9)		(93.3)
Total Sailaway	(5911.0)		(6509.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 88 Base-Year \$	5911.0	6528.4	6509.9
Escalation	1055.0	576.9	505.1
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(1055.0)	(576.9)	(505.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	6966.0	7105.3	7015.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	2	2	2
Total	2	2	2

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

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

e. (U) References --

(U) Production Estimate:
FY 1988 President's Budget

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

CVN-68 Class, December 31, 1995

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

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	48.1	48.1	38.1
Procurement	3862.7	4488.6	4158.8
Basic	(2458.7)		(2649.2)
Government Furnished Equipment	(1311.7)		(1413.5)
Other	(18.6)		(20.0)
OF/PD	(73.7)		(76.1)
Total Sailaway	(3862.7)		(4158.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	3910.8	4536.7	4196.9
Escalation	386.4	433.2	234.9
Development (RDT&E)	(-1.1)	(-1.1)	(-0.8)
Procurement	(387.5)	(434.3)	(235.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	4297.2	4969.9	4431.8

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- \$879.4M

e. (U) References --

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

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated October 02, 1992.

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CVN-68 Class, December 31, 1995

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

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	0.0	0.0	25.9
Procurement	4557.1	4719.2	5256.4
Basic	(2901.1)		(3359.5)
Government Furnished Equipment	(1547.8)		(1792.3)
Other Costs	(21.9)		(25.4)
OF/PD	(86.3)		(79.2)
Total Sailaway	(4557.1)		(5256.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	4557.1	4719.2	5282.3
Escalation	983.7	1019.7	1259.2
Development (RDT&E)	(0.0)	(0.0)	(3.1)
Procurement	(983.7)	(1019.7)	(1256.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	5540.8	5738.9	6541.5
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- \$1200.0M

e. (U) References --

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

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

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CVN-68 Class, December 31, 1995

12. (U) Unit Cost Summary:

CVN-74/75

	Current Estimate (DEC 95 SAR)	UCR Baseline (OCT 92 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY88\$)	6509.9	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3254.95	3264.20	-0.28
b. (U) Procurement			
(1) Cost (BY88\$)	6509.9	6528.4	
(2) Quantity	2	2	
(3) Unit Cost	3254.95	3264.20	-0.28

CVN-76

	Current Estimate (DEC 95 SAR)	UCR Baseline (OCT 92 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY95\$)	4196.9	4536.7	
(2) Quantity	1	1	
(3) Unit Cost	4196.90	4536.70	-7.49
b. (U) Procurement			
(1) Cost (BY95\$)	4158.8	4488.6	
(2) Quantity	1	1	
(3) Unit Cost	4158.80	4488.60	-7.35

CVN-77

	Current Estimate (DEC 95 SAR)	UCR Baseline (JUN 93 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY95\$)	5282.3	4719.2	
(2) Quantity	1	1	
(3) Unit Cost	5282.30	4719.20	11.93

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CVN-68 Class, December 31, 1995

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

CVN-77

	Current Estimate	UCR Baseline	Percent Change
b. (U) Procurement			
(1) Cost (BY95\$)	5256.4	4719.2	
(2) Quantity	1	1	
(3) Unit Cost	5256.40	4719.20	11.38

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CVN-68 Class, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	6966.0	0.0	6966.0
Previous Changes:				
Economic	-	-99.3	-	-99.3
Quantity	-	-	-	-
Schedule	-	-644.4	-	-644.4
Engineering	-	-	-	-
Estimating	-	+820.7	-	+820.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+77.0	-	+77.0
Current Changes:				
Economic	-	0.2	-	+0.2
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-28.2	-	-28.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-28.0	-	-28.0
Total Changes	-	+49.0	-	+49.0
Current Estimate	-	7015.0	-	7015.0

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CVN-68 Class, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5911.0	0.0	5911.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-124.1	-	-124.1
Engineering	-	-	-	-
Estimating	-	+743.7	-	+743.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+619.6	-	+619.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-20.7	-	-20.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-20.7	-	-20.7
Total Changes	-	+598.9	-	+598.9
Current Estimate	-	6509.9	-	6509.9

b. (U) Previous Change Explanations --

Procurement

Economic: Revised economic rates.

Schedule: Funding of two ships in FY 1988 vice one in FY 1990 and one in FY 1993.

Estimating: Congressional and Gramm-Rudman reductions. Increase for change orders to update the product baseline of CVN 74/75. Current & prior escalation offset. Revised shipbuilding contract cost. Increase for change orders. Reclassification of outfitting and post delivery to Sailaway cost. Offset for reclassification of outfitting and post delivery. Increased shipbuilding contract escalation. Revised

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CVN-68 Class, December 31, 1995

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

Support: estimate for Outfitting and Post Delivery.
Revised estimates for Post Delivery and Outfitting.
Reclassify outfitting and post delivery from
Support to Sailaway.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) Procurement		
Revised escalation indices. (Economic)	N/A	-1.0
Economic adjustment for negative program change. (Economic)	N/A	+1.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+1.1
Revised estimate for Outfitting and Post delivery (Estimating)	-21.4	-29.3
 Procurement Subtotal	 -20.7	 -28.0

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CVN-68 Class, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	47.0	4250.2	0.0	4297.2
Previous Changes:				
Economic	+0.5	-102.9	-	-102.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.2	+252.2	-	+242.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.7	+149.3	-	+139.6
Current Changes:				
Economic	0.3	-59.2	-	-58.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	54.2	-	+53.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-5.0	-	-5.0
Total Changes	-9.7	+144.3	-	+134.6
Current Estimate	37.3	4394.5	-	4431.8

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	48.1	3862.7	0.0	3910.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.7	+246.4	-	+236.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.7	+246.4	-	+236.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-0.3	49.7	-	+49.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.3	+49.7	-	+49.4
Total Changes	-10.0	+296.1	-	+286.1
Current Estimate	38.1	4158.8	-	4196.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic indices. Economic adjustment for Negative Program Change.

Estimating: Revised program estimate. Current prior inflation offset. Refinement of program estimates.

Procurement

Economic: Revised economic indices. Economic adjustment for Negative Program Change.

Estimating: Program reduced based on latest inflation indices. Refinement of program estimates. Adjustment for current and prior inflation. Increase cost for

CVN-68 Class, December 31, 1995

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

ship construction due to single ship buy, declining vendor base, and increase engineering effort. Congressional reduction for inflation assumptions and consultant services. Reclassification of outfitting and post delivery to Sailaway costs. Offset for reclassification of outfitting and post delivery. Funding profile changed. Congressional reductions in propulsion plant and procurement reform. Revised Outfitting and Post Delivery funding.

Support: Revised estimates for outfitting and post delivery. Reclassify outfitting and post delivery from Support to Sailaway.

c. (U) 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)	-0.3	-0.3
RDT&E Subtotal	-0.3	--
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-59.2
Adjustment for Current and Prior Inflation. (Estimating)	+50.0	+52.6
Revised estimates for Outfitting and Post Delivery. (Estimating)	-5.5	-5.0
Revised estimate to offset decreases in inflation indices. (Estimating)	+5.2	+6.6
Procurement Subtotal	+49.7	-5.0

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CVN-68 Class, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	5540.8	0.0	5540.8
Previous Changes:				
Economic	-	+286.8	-	+286.8
Quantity	-	-	-	-
Schedule	-	+235.3	-	+235.3
Engineering	-	-	-	-
Estimating	+50.3	+215.3	-	+265.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+50.3	+737.4	-	+787.7
Current Changes:				
Economic	-1.2	-398.8	-	-400.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-20.1	633.1	-	+613.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-21.3	+234.3	-	+213.0
Total Changes	+29.0	+971.7	-	+1000.7
Current Estimate	29.0	6512.5	-	6541.5

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	4557.1	0.0	4557.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+68.3	-	+68.3
Engineering	-	-	-	-
Estimating	+42.6	+122.4	-	+165.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+42.6	+190.7	-	+233.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-16.7	508.6	-	+491.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.7	+508.6	-	+491.9
Total Changes	+25.9	+699.3	-	+725.2
Current Estimate	25.9	5256.4	-	5282.3

b. (U) Previous Change Explanations --

Procurement

Schedule: Changed procurement buy to FY 2002 vice Fy 2001.

Estimating: Revised Outfitting and Post Delivery.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A

-2.3

CVN-68 Class, December 31, 1995

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Economic adjustment for negative program change. (Economic)	N/A	+1.1
Revised program estimates (Estimating)	-16.7	-20.1
RDT&E Subtotal	-16.7	-21.3
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-398.8
Increase due to production break, accelerated delivery date, and decreased shipyard manning. (Estimating)	+190.2	+237.7
Revised estimate for Outfitting and Post Delivery. (Estimating)	-3.2	-3.4
Revised estimate to offset decrease in inflation indices. (Estimating)	+321.6	+398.8
Procurement Subtotal	+508.6	+234.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

CVN-74/75

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
3483.0	-49.6	--	-322.2	--	396.3	--	--	24.5	3507.5

CVN-76

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
4297.2	-161.3	--	--	--	295.9	--	--	134.6	4431.8

CVN-68 Class, December 31, 1995

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

CVN-77

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5540.8	-113.2	--	235.3	--	878.6	--	--	1000.7	6541.5

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

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

Target	Initial Contract Price	
	Ceiling	Qty
\$865.2	\$0.0	0

Current Contract Price		
Target	Ceiling	Qty
\$865.2	\$0.0	0

Estimated Price At Completion	
Contractor	Program Manager
\$865.2	\$865.2

Previous Cumulative Variances	Cost Variance	Schedule Variance
	N/A	N/A
	\$	\$
Cumulative Variances To Date	\$0.0	\$0.0
Net Change	\$0.0	\$0.0

Explanation of Change:

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

(U) CVN-74/75 Construction:
 Tenneco, Newport News, VA
 N00024-88-C-2055, FPIF
 Award: June 30, 1988
 Definitized: June 30, 1988

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

Current Contract Price		
Target	Ceiling	Qty
\$3806.2	\$4470.4	2

Estimated Price At Completion	
Contractor	Program Manager
\$3806.2	\$3926.4

CVN-68 Class, December 31, 1995

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

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-125.6	\$-57.7
Cumulative Variances To Date (12/31/95)	\$-77.7	\$-48.5
Net Change	\$47.9	\$9.2

Explanation of Change:

The negative cost variance has steadily improved over the past year primarily due to favorable labor performance as NNS continues to use an improved build strategy resulting in a reduction in manhours. Material cost variance for the contract remains steady due to material being greater than 97% committed.

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

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$814.0	N/A	0	\$814.0	\$814.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

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

(U) Nuclear Components:	Initial Contract Price		
	Target	Ceiling	Qty
Westinghouse Electric Co., Schenectady, NY N00024-88-C-4008, FFP/CPFF Award: February 28, 1988 Definitized: February 28, 1988	\$354.6	N/A	0

CVN-68 Class, December 31, 1995

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$354.6	N/A	0	\$354.6	\$354.6
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date			N/A	N/A
Net Change			\$	\$
			\$0.0	\$0.0

Explanation of Change:

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

(U) CVN-76 Construction: Newport News Shipbuilding, Newport News, VA N00024-95-C-2106, PPIF Award: December 8, 1994 Definitized: December 8, 1994	Initial Contract Price		
	Target	Ceiling	Qty
	\$2517.3	\$2884.0	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$2518.0	\$2884.8	1	\$2554.9	\$2517.3
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date (11/16/95)			N/A	N/A
Net Change			\$1.0	\$12.9
			\$1.0	\$12.9

Explanation of Change:

The positive cost variance is due to a favorable Overhead rate variance.

The positive schedule variance is a result of progress payments on Ships Service Turbine Generator (SSTG) sets occurring earlier than planned.

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 40.9% (9 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 62.8% (\$11292.1 / \$17988.3)

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CVN-68 Class, December 31, 1995

CVN-74/75

- (1) Percent Program Completed: 75.0% (9 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 99.2% (\$6956.5 / \$7015.0)

CVN-76

- (1) Percent Program Completed: 46.2% (6 yrs/13 yrs)
- (2) Percent Program Cost Appropriated: 97.8% (\$4335.6 / \$4431.8)

CVN-77

- (1) Percent Program Completed: 0.0% (0 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 0.0% (\$0.0 / \$6541.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2009)	Total
RDT&E	37.3	-	-	29.0	66.3
Procurement	11223.0	31.8	9.0	6658.2	17922.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	11260.3	31.8	9.0	6687.2	17988.3

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CVN-68 Class, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-74/75

Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-99)	Total
RDT&E	-	-	-	-	-
Procurement	6924.7	31.8	9.0	49.5	7015.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6924.7	31.8	9.0	49.5	7015.0

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-76

Appropriation	Prior Years (FY91-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2003)	Total
RDT&E	37.3	-	-	-	37.3
Procurement	4298.3	-	-	96.2	4394.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	4335.6	-	-	96.2	4431.8

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CVN-68 Class, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

CVN-77 Appropriation	Prior Years (FY94-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2009)	Total
RDT&E	-	-	-	29.0	29.0
Procurement	-	-	-	6512.5	6512.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	-	-	-	6541.5	6541.5

c. (U) Annual Summary -- CVN-74/75

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1988	2		6509.9	6281.7	6728.3	6410.1	5424.6	2.6
1992				139.4	168.0	168.0	54.6	2.5
1993				10.7	13.0	10.0	9.5	3.2
1994				10.8	13.7	13.0	8.2	4.2
1995				1.3	1.7			3.8
1996				24.1	31.8			2.0
1997				6.7	9.0			2.2
1998				5.1	7.1			2.2

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CVN-68 Class, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1999				30.1	42.4			2.3
Subtot	2		6509.9	6509.9	7015.0	6601.1	5496.9	
Grand Total	2		6509.9	6509.9	7015.0	6601.1	5496.9	

c. (U) Annual Summary -- CVN-76

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1991				1.9	1.8	1.8	1.8	4.3
1992				8.6	8.2	8.2	8.2	2.8
1993				12.3	12.0	12.0	11.6	2.7
1994				10.6	10.5	10.5	10.1	2.0
1995				4.7	4.8	4.8	3.5	2.7
Subtot				38.1	37.3	37.3	35.2	

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CVN-68 Class, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1993				824.9	829.4	829.4	265.3	3.2
1994								4.2
1995	1		4158.8	3257.8	3468.9	3067.8	150.0	3.8
1999								2.0
2000								2.2
2001								2.2
2002				10.8	13.4			2.3
2003				65.3	82.8			2.2
Subtot	1		4158.8	4158.8	4394.5	3897.2	415.3	
Grand Total	1		4158.8	4196.9	4431.8	3934.5	450.5	

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CVN-68 Class, December 31, 1995

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

c. (U) Annual Summary -- CVN-77

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1998				4.6	5.0			2.2
1999				9.0	10.0			2.3
2000				8.0	9.0			2.2
2001				3.5	4.0			2.2
2002				0.8	1.0			2.2
Subtot				25.9	29.0			

Appropriation: 1611 Shipbuilding and Conversion, Navy

2000				370.6	440.2			2.2
2001				120.2	145.9			2.2
2002	1		5256.4	4686.4	5813.9			2.2
2006				10.6	14.4			2.2
2007				10.0	13.9			2.2
2008				15.9	22.5			2.2
2009				42.7	61.7			2.2
Subtot	1		5256.4	5256.4	6512.5			
Grand								

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CVN-68 Class, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

Total	1		5256.4	5282.3	6541.5			
-------	---	--	--------	--------	--------	--	--	--

17. (U) Production Rate Data:

CVN-74/75

- a. (U) Deliveries to Date --
- | | |
|-------------|-------------|
| RDT&E | Plan/Actual |
| Procurement | 0/0 |
| | 1/1 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

CVN-76

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

CVN-77

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

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

- a. (U) Assumptions and Ground Rules --

These costs are based on the operating costs for supplies, equipage, and pierside support when deployed.

18b. (U) Operating and Support Costs (Cont'd):
CVN-74/75

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

Cost Element	Avg Annual Cost Per CVN	N/A
Operating costs	11.4	N/A
Total	11.4	N/A

c. (U) Contractor Support Costs -- None.

CVN-76

a. (U) Assumptions and Ground Rules --

Same as CVN 74/75 above.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

CVN-77

a. (U) Assumptions and Ground Rules --

Same as CVN 74/75 above.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

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

AS OF DATE: December 31, 1995

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

2. (U) DoD Component: USAF

Joint Participants:

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

3. (U) Responsible Office and Telephone Number:

NAVSTAR GPS Joint Program Office	COL JOHN L. CLAY
Space and Missile Systems Center	Assigned: September 15, 1995
2435 Vela Way, Suite 1613	AV 833-1526 COMM (310) 363-1526
Los Angeles AFB, CA 90245-5500	

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

RDT&E:

PE 0206626M, 0305164A, 0305164F, 0305164M, 0305164N, 0305165F, 0603421F
PE 0604478F, 0604480F, 0604777N, 0604778A, 0604778F

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

PROCUREMENT:

APFN 1109 ICN N/A (Navy)
APFN 1506 ICN OSIP 17-88 (Navy)
APFN 1611 ICN N/A (Navy)
APFN 1810 ICN BLI265700 (Navy)
APFN 2031 ICN K47800 (Army)
APFN 2035 ICN K47800 (Army)
APFN 3010 ICN MGPS00 (Air Force)
APFN 3020 ICN MGPS00 (Air Force)
APFN 3080 ICN MGPS00 (Air Force)

MILCON:

PE 0305165F
O & M:
PE 0305164N, 0305164F

5. (U) Related Programs:

Nuclear Detonation (NUDET) Detection System (NDS); Space Boosters Program (Delta II); Medium Launch Vehicle III (MLVIII); Evolved Expendable Launch Vehicle (EELV); and Combat Survivor/Evader Locator (CSKL).

6. (U) Mission and Description:

The NAVSTAR Global Positioning System (GPS) is a space-based radio positioning, navigation, and time distribution system. The GPS provides precise, continuous, all-weather, common-grid positioning, velocity, navigation, and time reference capability to multiple users worldwide. Mission areas supported include navigation and position fixing, air interdiction, close air support, special operations, strategic attack, counterair and aerospace defense, theater and tactical command, control, communications, and intelligence and ground/sea warfare. GPS carries a suite of nuclear detonation detection system sensors as a secondary payload. These sensors provide worldwide, near realtime, 3-dimensional location of nuclear detonations. NAVSTAR GPS does not replace any United States Air Force weapon system; however, it provides the capability to replace the following support systems: Very High Frequency (VHF) Omnidirectional Range (VOR), Long Range Aid to Navigation (LORAN), OMEGA, Tactical Air Navigation (TACAN), and Distance Measurement Equipment (DME).

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Full scale development of the Global Positioning System (GPS) began in June 1979, with approval of Milestone II. Between this date and October 1985, the Joint Program Office (JPO) launched 10 Block I development satellites and developed the associated ground control system software to support system testing. In May 1983, the JPO

NAVSTAR GPS, December 31, 1995

7a. (U) Program Highlights (Cont'd):

awarded a firm-fixed-price, multiyear contract for 28 Block II satellites, and they completed qualification testing in May 1986. The JPO successfully launched the first production satellite in February 1989, and they have since completed an additional 23 successful launches. In June 1989, the Department of Defense (DoD) added 21 replenishment satellites (Block IIR) to the approved program. The JPO completed development of Block IIR in September 1993, and first delivery is expected in August 1996. Initial operational capability (IOC) was declared on 8 December 1993 in a joint announcement by the DoD and Department of Transportation (DOT).

Air Force Space Command (AFSPC) assumed management responsibility for the ground control segment in April 1990. This segment consists of ground antennas, monitor stations, and a master control station necessary to control GPS satellites. The JPO delivered the final release of operational control software for the current production satellite (Block IIA) to the AFSPC in May 1993.

GPS user equipment development began in June 1979 with receiver testing (using Block I satellites) in a variety of land, sea, and air vehicles. Following a competitive source selection, the JPO awarded the first major user equipment contract in April 1985. This contract included research and development as well as production options for 1-, 2-, and 5-channel GPS airborne, shipboard, and manpack (portable) receivers. The JPO received approval for low rate initial production for user equipment in June 1986, and it subsequently awarded the first production option in August 1986. In October 1987, the JPO awarded two second-source contracts for 2- and 5-channel airborne and shipboard receivers. In September 1990, the JPO awarded five production contracts for standard GPS user equipment. Since then, they have awarded additional contracts for the Miniaturized Airborne GPS Receiver (MAGR), the Small Lightweight GPS Receiver (SLGR), the Timing GPS Receiver (TGR), and the Precision Lightweight GPS Receiver (PLGR). The TGR and PLGR were nondevelopmental items (NDI). GPS user equipment successfully completed the Defense Acquisition Board (DAB) Milestone IIIB in January 1992 and achieved depot IOC in March 1993.

To expedite GPS platform installations, Congress mandated, in November 1993, that all military vehicles must have GPS hardware installed by 30 September 2000. The Air Force implemented and funded Project 2000 to meet this requirement.

In October 1992, the NAVSTAR GPS program transferred from a Program Executive Officer for Space to a Designated Acquisition Commander Program. In addition, the Defense Acquisition Executive

NAVSTAR GPS, December 31, 1995

7a. (U) Program Highlights (Cont'd):

redesignated GPS from an Acquisition Category 1D to a 1C program.

b. (U) Significant Developments Since Last Report --

On 27 April 1995, Air Force Space Command (AFSPC) declared full operational capability (FOC) of the Global Positioning System (GPS) with the commissioning of 24 operational Block II/IIA satellites and the successful completion of operational testing.

The GPS Operational Control Segment support contract was awarded on 21 July 1995 which consolidated the efforts of six existing contracts into one. This acquisition combined software/hardware development, maintenance, and modification work into a single contract.

On 29 September 1995, a request for proposal was released for Block IIF. Three offerors submitted proposals in early December 1995 and contract award is planned for late April 1996. The acquisition strategy for Block IIF is to now procure 33 satellites. Previously, the strategy was to procure 51 satellites, but it was changed by senior Department of Defense (DoD) leadership to prevent limitations on future competition.

In October 1995, AFSPC approved the launch of Mission II-25 (Block IIA) for 27 March 1996. This will leave three Block IIA satellites in ground storage awaiting future launch calls.

Toward the end of calendar year (CY) 95, work began on the Tri-Service User Equipment (UE) Acquisition Strategy Panel (ASP) Integrated Product Team (IPT). The UE ASP IPT was chartered to develop a comprehensive plan that looked at progress towards the fiscal (FY) 2000 Congressional mandate to integrate GPS, emerging technologies, and dual use of GPS military and civilian communities.

A midterm briefing occurred in November 1995 to the Service Acquisition Executives (SAEs). This briefing highlighted the IPT's methodology and was well received. A final briefing was presented in February 1996.

In CY95, work began on the Navigation Warfare (NAVNAR) Advanced Concept Technology Demonstration (ACTD). The ACTD objectives included: 1) formulating a Concept of Operations for joint forces using GPS in an electronic warfare environment; 2) developing, fielding, and demonstrating new protection and operational employment (prevention) capabilities for airborne and ground-based platforms; and 3) providing the basis for a program to implement these new capabilities into DoD and Allied forces.

With direction from the Office of the Secretary of Defense (OSD), the Joint Program Office (JPO) also began to create a comprehensive

NAVSTAR GPS, December 31, 1995

7b. (U) Program Highlights (Cont'd):

acquisition plan to meet navigation warfare protection and denial requirements which complements the NAVWAR ACTD efforts. An initial program management plan and cost estimates were provided to Air Staff and OSD for review. A final briefing to the Under Secretary of Defense for Acquisition and Technology (USD (A&T)) was presented in February 1996.

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

c. (U) Changes Since As Of Date --

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

In February 1996, the Tri-Service User Equipment Acquisition Strategy Panel Integrated Product Team presented a final briefing to the Service Acquisition Executives (SAEs). The SAEs accepted the recommended strategy and endorsed the proposed actions. Additionally, a Navigation Warfare acquisition plan briefing was presented to the Under Secretary of Defense for Acquisition and Technology, and the proposed approach was approved. Efforts are currently underway to implement the acquisition plan.

In February 1996, the Joint Program Office (JPO) announced slips to three Block IIR milestones as a result of Lockheed Martin's declaration that the milestones could not be met due to various qualification and environmental testing issues. First and second contract deliveries slipped from April 1996 and June 1996 to August 1996 and November 1996, respectively. First launch availability slipped from August 1996 to January 1997. As a result we will breach three Block IIR schedule milestones.

8. (U) Threshold Breaches:

We will breach the three Block IIR schedule milestones in the Air Force Acquisition Executive (AFAE) approved Acquisition Program Baseline (APB) dated 15 September 1994. A program deviation report and baseline change request will be submitted in late March 1996. There are no cost breaches to the AFAE APB and no Numm-McCurdy unit cost breaches.

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9. (U) Schedule:
NAVSTAR GPS Satellite

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	DEC 73	DEC 73	DEC 73
Milestone II (DSARC)	JUN 79	JUN 79	JUN 79
First Production Satellite Launch	JAN 87	FEB 89	FEB 89
Block IIR Contract Award	N/A	JUN 89	JUN 89
Control Segment Turnover to AFSPACECOM	N/A	APR 90	APR 90
Last Block IIA Satellite Delivery	N/A	NOV 92	MAY 93
21 Satellites on-orbit	N/A	MAR 93	JUN 93
First Block IIR Contract Delivery	N/A	NOV 95	AUG 96 (Ch-1)
Second Block IIR Contract Delivery	N/A	FEB 96	NOV 96 (Ch-1)
Availability of First Block IIR Satellite for Launch	N/A	MAR 96	JAN 97 (Ch-1)

b. (U) Previous Change Explanations --

Launch of the first Block II production satellite slipped from January 1987 to January 1989 due to the shuttle stand down. Subsequently, the Air Staff revised the program management directive to incorporate the stand down. An additional delay in the Delta II initial launch capability resulted in the slip in first production satellite launch date from January 1989 to February 1989. Air Force Space Command (AFSPC) accepted turnover of the Global Positioning System (GPS) satellite control segment in April 1990. Twenty-one satellites on-orbit moved from March 1993 to June 1993. The final Block IIA satellite delivery changed from November 1992 to May 1993.

In January 1995, three Block IIR satellite milestones were slipped due to technical problems and delivery delays. First and second Block IIR contract deliveries slipped from November 1995 and February 1996 to April 1996 and June 1996, respectively. Additionally, availability of first Block IIR satellite for launch slipped from March 1996 to August 1996.

c. (U) Current Change Explanations --

(Ch-1) In February 1996, three Block IIR milestones were slipped due to technical problems delaying deliveries. The delivery delays are due primarily to cesium clock qualification failures and electromagnetic interference problems. A modification is underway to replace the cesium clock with a rubidium clock. A redesign and resolution of the electromagnetic interference is expected by May 1996. First and second Block IIR contract deliveries slipped from April 1996 and June 1996 to August 1996 and November 1996, respectively. Availability of first Block IIR satellite for launch slipped from August 1996 to January 1997.

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9d. (U) Schedule (Cont'd):
NAVSTAR GPS Satellite

d. (U) References --

- (U) Development Estimate:
Decision Coordinating Paper (DCP) #133, Revision B, February 1, 1980.
- (U) Approved Program:
AFAP Approved Acquisition Program Baseline dated September 15, 1994.

NAVSTAR GPS User Equip

a. (U) Milestones --

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

Full Depot Capability: Full Operational Capability (FOC) of initial standardized equipment depot capability occurred at Warner Robins Air Logistics Center in July 1994 and Tobyhanna Army Depot in September 1994. FOC for remaining user equipment is expected in June 1997.

b. (U) Previous Change Explanations --

Due to reliability and maintainability problems identified during user equipment testing, the program office conducted additional testing, causing the delay in completion of user equipment development testing. Delay of the first Block II satellite launch, late user equipment deliveries, and increased coordination required at the conclusion of testing caused the delay in Milestone IIIB from March 1989 to September 1990. In September 1990, the need to conduct additional testing to verify that all exit criteria were met, again delayed the Milestone IIIB decision. These delays caused the slip in the first full-rate user equipment production delivery date. The slip in Milestone IIIB, from September 1991 to January

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

NAVSTAR GPS User Equip

1992, again caused a slip in the first full-rate user equipment production deliveries from April 1993 to November 1993. Late delivery of an engineering change proposal for depot automatic test equipment caused the slip in depot capability from September 1992 to March 1993. The Joint Program Office added the full depot capability milestone in 1992.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980; DCP on User Equipment, June 1986.

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated September 15, 1994.

10. (U) Performance Characteristics:

NAVSTAR GPS Satellite

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
3-D System Positioning Accuracy (meters) (Spherical Error Probable (SEP))	16	16 / 16	10	16
3-D System Positioning Accuracy for 180 days after last Nav Update				
Block II SEP (km)	N/A	10 / 10	TBD	10
Block IIR SEP (m)	N/A	16 / 16	TBD	16
Block II Satellite Mean Mission Duration (MMD) (yrs)	6	6 / 6	4.55 /A	6.5
System Availability % (minimum of 21 satellites are operational at any time)	98	98 / 98	98.74 /B	98
Satellite: (Block II)				

(b)(1)

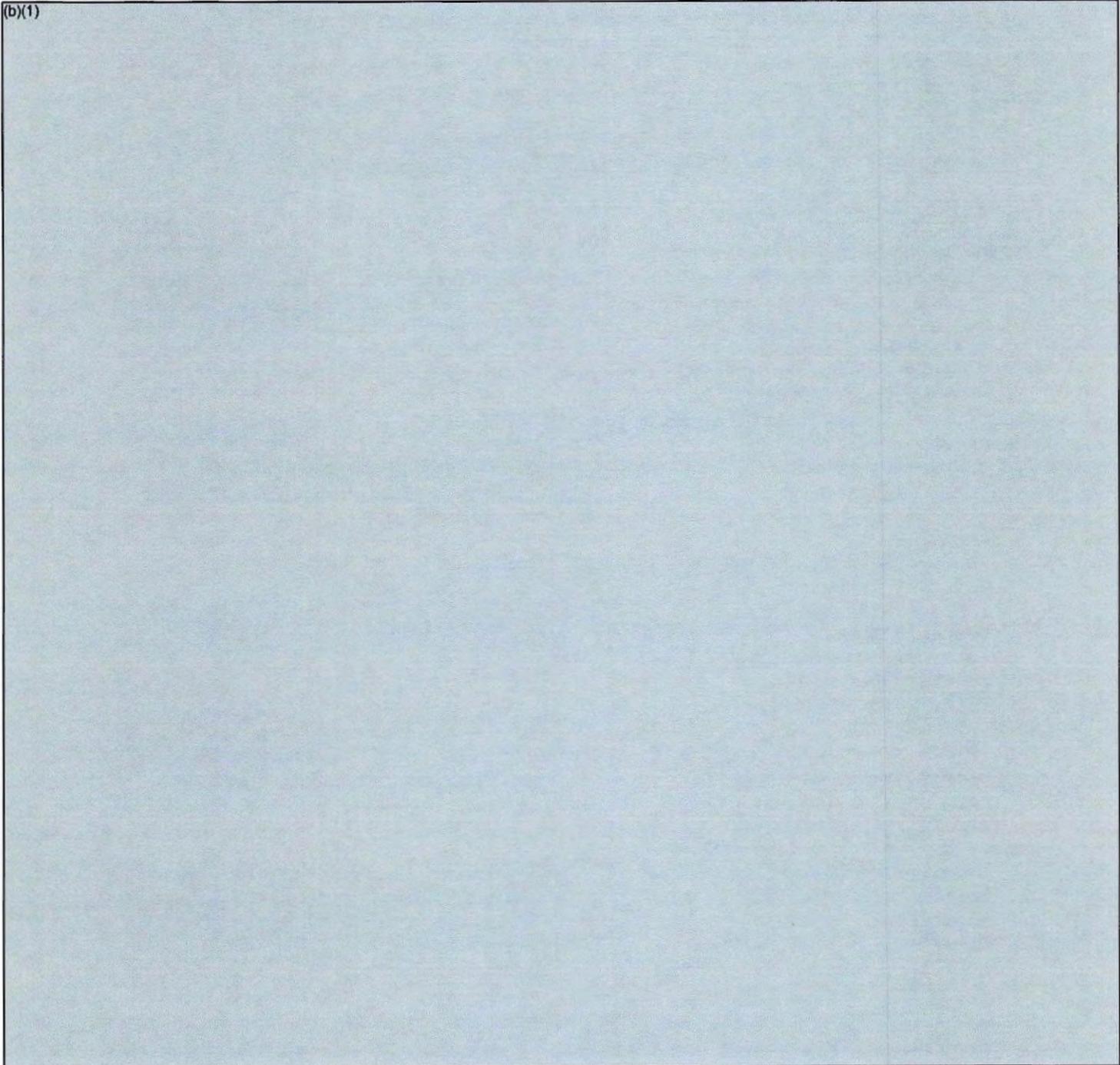
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10a. (U) Performance Characteristics (Cont'd):
NAVSTAR GPS Satellite

Approved

Demon-

(b)(1)



NAVSTAR GPS, December 31, 1995

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

NAVSTAR GPS Satellite

- (U) A/ Current demonstrated performance reflects Block II only.
- (U) B/ Requirement is 98% probability of 21 satellites operational. Demonstrated performance is based upon actual availability of the satellites in the constellation.
- (U) C/ Gamma dose rate parameters listed in the approved program column are derived from the approved system operation requirements documents and technical requirements documents.

b. (U) Previous Change Explanations --

Total dose was changed to N/A because requirements could not be specified by a single number. It was specified by integral fusion and natural spectrums. Space based laser threat, Neutron, and X-Ray fluence were changed to correct previous oversights. Cesium Clock Stability changed as a result of test data from the factory & the United States Navy Observatory. Mean mission duration changed as a result of actual on-orbit experience.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

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

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated September 15, 1994.

NAVSTAR GPS User Equip

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Reliability Mean Time Between Operational Mission Failures (hours)				
Airborne				
5-Channel	550	590 / 500	2130.2	2130.2
2-Channel	550	929 / 500	722.8	722.8
Ground (hrs)	850	2000 / 500	1653.2	1653.2
Sea (hrs)	900	680 / 680	2880.8	2880.8
Maintainability Mean Time to Repair (hours)				
Airborne				

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
5-Channel	1.3	1 / 1	.75	.75
2-Channel	1.3	.75 / .75	.27	.27
Ground (hrs)	1.2	.75 / .75	.18	.18
Sea (hrs)	1.3	1.5 / 1.5	.77	.77

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

b. (U) Previous Change Explanations --

The initial development estimate was established based on engineering estimates and limited test data from initial prototype user equipment. Reliability and Maintainability objectives and thresholds were updated at Milestone IIIB to represent improvements in equipment technology. Due to large variation in performance between 2- and 5-channel receivers, we separated reliability and maintainability parameters for each receiver type. Changes were made to reflect results of latest Global Positioning System receiver operational testing.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980;
DCP on User Equipment, June 1986.

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated September 15, 1994.

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NAVSTAR GPS, December 31, 1995

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

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	967.6	1563.3	1520.7
Procurement	623.4	3026.9	2940.1
Flyaway	(583.6)		(2933.9)
Other Weapon Systems	(39.8)		(6.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	8.4	4.7	4.7
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 79 Base-Year \$	1599.4	4594.9	4465.5
Escalation	707.3	6798.0	5784.0
Development (RDT&E)	(204.9)	(1389.2)	(1202.6)
Procurement	(496.1)	(5406.2)	(4578.8)
Construction (MILCON)	(6.3)	(2.6)	(2.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2306.7	11392.9	10249.5
b. (U) Quantity --			
Development (RDT&E)	12	12	12
Procurement	28	106	106
Total	40	118	118

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

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

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

(U) Approved Program:
AFAR Approved Acquisition Program Baseline dated September 15, 1994.

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

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	941.8	1005.3	1097.8
Procurement	1613.1	2143.3	1998.7
Flyaway	(1115.9)		(1349.9)
Other Weapon Systems	(497.2)		(574.7)
Peculiar Support	(0.0)		(32.0)
Initial Spares	(0.0)		(42.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	40.2
Total FY 79 Base-Year \$	2554.9	3148.6	3136.7
Escalation	2320.9	3492.9	3453.9
Development (RDT&E)	(441.9)	(593.7)	(689.1)
Procurement	(1879.0)	(2899.2)	(2723.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(41.8)
Total Then-Year \$	4875.8	6641.5	6590.6
b. (U) Quantity --			
Development (RDT&E)	129	248	248
Procurement	27210	119695	234450
Total	27339	119943	234698

Note: The family of NAVSTAR Global Positioning System 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.

No LRIP quantity has been approved for this program.

c. (U) Foreign Military Sales/International Cooperative Programs --

Country	Dollars	Quantities Receivers/Security Devices
Australia	\$.8M	38/1200
Belgium	\$.1M	0/241
Canada	\$ 1.1M	251/1079
Denmark	\$.3M	0/908
Finland	\$ 2.2M	64/0
France	\$ 2.2M	0/5928

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

NAVSTAR GPS User Equip

Germany	\$ 10.8M	100/7079
Greece	\$ 1.1M	45/0
Israel	\$ 1.6M	0/6469
Italy	\$.7M	0/1714
Japan	\$ 6.5M	65/395
Korea	\$ 3.3M	216/660
Luxembourg	\$.0M	18/0
Netherlands	\$.3M	0/667
New Zealand	\$.0M	0/22
Norway	\$.2M	34/221
Spain	\$.7M	176/38
Turkey	\$ 2.8M	289/955
United Kingdom	\$ 2.4M	1/7314
Mid-Life Update	\$ 4.1M	170/0

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

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Decision Coordinating Paper (DCP) #133 Revision B, February 1, 1980;
DCP on User Equipment, June 86.

(U) Approved Program:

APAE Approved Acquisition Program Baseline dated September 15, 1994.

12. (U) Unit Cost Summary:

NAVSTAR GPS Satellite

	Current Estimate (DEC 95 SAR)	UCR Baseline (SEP 94 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY79\$)	4465.5	4594.9	
(2) Quantity	118	118	
(3) Unit Cost	37.843	38.940	-2.82

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NAVSTAR GPS, December 31, 1995

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

NAVSTAR GPS Satellite

	Current Estimate	UCR Baseline	Percent Change
b. (U) Procurement			
(1) Cost (BY79\$)	2940.1	3026.9	
(2) Quantity	106	106	
(3) Unit Cost	27.737	28.556	-2.87

NAVSTAR GPS User Equip

	Current Estimate (DEC 95 SAR)	UCR Baseline (SEP 94 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY79\$)	3136.7	3148.6	
(2) Quantity	234698	119943	
(3) Unit Cost	0.013	0.026	-49.09
b. (U) Procurement			
(1) Cost (BY79\$)	1998.7	2143.3	
(2) Quantity	234450	119695	
(3) Unit Cost	0.009	0.018	-52.39

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1172.5	1119.5	14.7	2306.7
Previous Changes:				
Economic	-37.4	-14.1	-1.4	-52.9
Quantity	-	+5198.7	-	+5198.7
Schedule	+37.9	+569.0	-	+606.9
Engineering	+291.6	+344.0	-	+635.6
Estimating	+1099.8	-327.9	+0.5	+772.4
Other	-	-	-	-
Support	+339.6	+1362.6	-6.5	+1695.7
Subtotal	+1731.5	+7132.3	-7.4	+8856.4
Current Changes:				
Economic	-154.0	-745.4	-	-899.4
Quantity	-	-	-	-
Schedule	-	17.8	-	+17.8
Engineering	-	-	-	-
Estimating	-26.7	1379.4	-	+1352.7
Other	-	-	-	-
Support	-	-1384.7	-	-1384.7
Subtotal	-180.7	-732.9	-	-913.6
Total Changes	+1550.8	+6399.4	-7.4	+7942.8
Current Estimate	2723.3	7518.9	7.3	10249.5

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NAVSTAR GPS, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	967.6	623.4	8.4	1599.4
Previous Changes:				
Quantity	-	+1654.8	-	+1654.8
Schedule	+18.1	-18.4	-	-0.3
Engineering	+160.6	+239.0	-	+399.6
Estimating	+263.3	-9.9	+0.4	+253.8
Other	-	-	-	-
Support	+122.6	+441.4	-4.1	+559.9
Subtotal	+564.6	+2306.9	-3.7	+2867.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-11.5	484.8	-	+473.3
Other	-	-	-	-
Support	-	-475.0	-	-475.0
Subtotal	-11.5	+9.8	-	-1.7
Total Changes	+553.1	+2316.7	-3.7	+2866.1
Current Estimate	1520.7	2940.1	4.7	4465.5

b. (U) Previous Change Explanations --

RDT&E

- Economic: Revised escalation indices.
- Schedule: Increases due to accelerated design/ development of flexible modular interface for tailoring user equipment to host vehicles and incorporation of Block IIR functionality.
- Engineering: Increases due to redefinition of the Global Positioning System (GPS) survivability program, and development, testing, and redefinition of requirements for GPS replenishment (Block IIR) satellites.
- Estimating: Increases due to adjustments for current and prior

NAVSTAR GPS, December 31, 1995

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

year escalation changes; an additional year of support for control and user segments; additional control segment modifications required for interface with Block II space vehicle; increased scope associated with Block IIR development, contract support, and full functionality; realignment of funding from weapons procurement for operations support system and launch critical Block IIR software; funding for sustaining engineering; and development of Block IIF and next generation satellites.

Support: Increases due to additional control segment support required prior to turnover to Air Force Space Command; additional support associated with Block IIR development and testing; additional support due to space shuttle launch delays; and new requirement for a system training simulator.

Procurement

Economic:

Revised escalation indices.

Quantity:

Increases due to addition of 21 Block IIR satellites, 33 Block IIF satellites, and 52 next generation satellites.

Schedule:

Increases due to a one-year delay in start of satellite production and change to an annual buy of four Block IIR satellites per year.

Engineering:

Increases due to addition of engineering changes for Block IIR procurement.

Estimating:

Increases due to adjustments for prior and current year escalation changes. Decreases due to changing from an annual to a multiyear procurement (MYP) approach for Blocks IIA and IIR; Congressional withdrawal of cancellation ceiling for funding Block IIR MYP; Air Force reprogramming of excess prior year funds and funding for the canceled Block IIR optional satellites to higher priorities; realignment of flyaway and support and deletion of space modifications funding.

Support:

Increases due to a one-year program extension; adding Block IIR support through FY16; and realignment of flyaway and support.

MILCOM

Economic:

Revised escalation indices.

Estimating:

The primary cause of the increase was the difference between the President's Budget and required funding.

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

NAVSTAR GPS Satellite

Support: The overall decrease was due to the deletion of the Consolidated Space Operation Center contingency funding.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	N/A	-154.0
Adjustment for current and prior year escalation (Estimating)	+1.0	+2.1
Reduction for future engineering change order estimates and Congressionally directed Air Force Reductions (FY96-FY01) (Estimating)	-4.5	-10.0
Air Force prior year funds reprogrammed for additional requirement (FY89) (Estimating)	+0.2	+0.3
Congressional reduction to FY96 (Estimating)	-0.5	-1.0
Reprogramming of excess program funds for Bosnia (FY96) (Estimating)	-0.3	-0.6
Funds added in the Air Force program objective memorandum for Navigation Warfare (NAVWAR) denial protection studies (FY97) (Estimating)	+1.9	+4.0
Addition of funding for accuracy improvement initiative (FY96-FY98) (Estimating)	+11.2	+24.0
Funds overstated in Air Force database based on revised inflation indices (FY97-FY01) (Estimating)	+1.6	+3.7
Funds declared excess based on Operational Control System new consolidated contract (FY97-FY99) (Estimating)	-22.1	-49.2
RDT&E Subtotal	-11.5	-180.7
(2) Procurement		
Revised escalation indices (Economic)	--	-745.4
Reprofile of two satellites from fiscal year (FY) 00 and FY01 to FY02 and FY03 respectively (Schedule)	--	+17.8

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for current and prior year escalation (Estimating)	+8.4	+19.1
Adjustment for funds not added to FY02 and FY03 for schedule reprofile (Estimating)	--	-17.8
Reduction of future engineering change order estimates and Congressionally directed Air Force Federally Funded Research and Development Center (FFRDC) funding reductions (Estimating)	-1.2	-2.6
Reprogramming of excess funds from other lower priority Air Force programs for on-orbit performance incentives (FY88 (Block IIA) and FY92-FY95 (Block IIR)) (Estimating)	+37.1	+80.7
Congressional reduction to FY96 (Estimating)	-6.5	-15.0
Reprogramming of excess program funds for Bosnia (FY96) (Estimating)	-1.2	-2.8
Reprogramming of excess program funds for higher Air Force priority (FY97-FY01) (Estimating)	-8.0	-19.6
Revised estimate to reflect change in Air Force economic assumptions (FY97-FY01). (Estimating)	-18.8	-47.3
Correction to previous SAR variances to recategorize procurement support (contractor and other agencies) from support to flyaway. (Estimating)	+475.0	+1384.7
(Support)	-475.0	-1384.7
Procurement Subtotal	+9.8	-732.9

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

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

	RDT&E	PROC	OM	TOTAL
Development Estimate	1383.7	3492.1	0.0	4875.8
Previous Changes:				
Economic	-13.9	-63.7	-7.1	-84.7
Quantity	-	-294.2	-20.0	-314.2
Schedule	+20.7	+466.6	-	+487.3
Engineering	-	-46.8	-	-46.8
Estimating	+404.5	-18.1	+105.8	+492.2
Other	-	-	-	-
Support	-17.8	+726.9	+3.7	+712.8
Subtotal	+393.5	+770.7	+82.4	+1246.6
Current Changes:				
Economic	-24.4	-213.2	-1.8	-239.4
Quantity	-	151.3	-	+151.3
Schedule	-	-14.5	-	-14.5
Engineering	-	-	-	-
Estimating	34.1	757.8	-0.7	+791.2
Other	-	-	-	-
Support	-	-222.5	2.1	-220.4
Subtotal	+9.7	+458.9	-0.4	+468.2
Total Changes	+403.2	+1229.6	+82.0	+1714.8
Current Estimate	1786.9	4721.7	82.0	6590.6

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

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

	RDT&E	PROC	O&M	TOTAL
Development Estimate	941.8	1613.1	0.0	2554.9
Previous Changes:				
Quantity	-	-192.3	-10.0	-202.3
Schedule	+10.6	+75.0	-	+85.6
Engineering	-	-21.3	-	-21.3
Estimating	+135.1	+71.4	+48.6	+255.1
Other	-	-	-	-
Support	-5.1	+212.8	+1.4	+209.1
Subtotal	+140.6	+145.6	+40.0	+326.2
Current Changes:				
Quantity	-	44.5	-	+44.5
Schedule	-	-1.6	-	-1.6
Engineering	-	-	-	-
Estimating	15.4	258.3	-0.4	+273.3
Other	-	-	-	-
Support	-	-61.2	0.6	-60.6
Subtotal	+15.4	+240.0	+0.2	+255.6
Total Changes	+156.0	+385.6	+40.2	+581.8
Current Estimate	1097.8	1998.7	40.2	3136.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Primary cause of increase was acceleration of host vehicle platform integrations.

Estimating: Adjustments for current and prior year escalation changes. Primary causes of increase included revisions to engineering and test estimates by all services, extension of program through 2008, and additional engineering estimates for development of the Selective Availability/Anti-Spoofing Module (SAASM) and Global Positioning System (GPS) enhancements.

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

NAVSTAR GPS User Equip

- Support:** Decreases were primarily due to a decrease in Air Force mission support and contractor support estimates.
- Procurement**
- Economic:** Revised escalation indices.
- Quantity:** Major cause of decrease was the switch to a non-developmental item procurement strategy for Global Positioning System (GPS) receivers, resulting in substantially reduced unit cost (more than offsetting increased quantities) as well as an overall reduction in requirements for Precision Lightweight GPS Receiver sets, Miniaturized Airborne GPS Receivers, and high cost aircraft receiver units.
- Schedule:** Overall increase was due primarily to restructuring and extending procurement schedules to account for new force structure requirements.
- Engineering:** Decrease was due to a value engineering change proposal.
- Estimating:** Adjustments for current and prior year escalation. Primary reasons for overall increase included revision of learning curves to reflect new contracts, new labor estimates, revisions to aircraft integration hardware and installation estimates, increases in recurring units costs of sea sets, revised program support costs, and aircraft modification estimates. Decreases were caused primarily by unit cost decreases, lower actual prices for aircraft sets, adjustments for force structure reductions, revised estimates for Line Replaceable Units, and transition to commercial and embedded GPS receivers.
- Support:** Overall increase to date was due to: updated estimates for depot support, user equipment test, and technical support; adjustments necessary for support of increased quantities including spares, fielding, and data costs; revised estimates to support next-generation GPS requirements; and revised estimates for program support of ground and aircraft sets. Decreases were due primarily to revised requirements for spares and installation kits, support estimates for sea and ground sets, revised estimates for support, and aircraft support.

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

O & M

Economic: Revised escalation indices.
Quantity: Decrease was due to a reduction in labor estimates due to reduced quantities for the Navy and Marine Corps.
Estimating: Adjustments for current and prior year escalation. Overall increase was due primarily to revised estimate by the Navy and Marine Corps for installation labor, and the addition of Marine Corps and Navy requirements. Primary reasons for decreases were a reduction in funding for training of operations and maintenance personnel and aircraft support.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices (Economic)	--	-24.4
Increased estimate for development of Global Positioning System (GPS) enhancements (FY94-FY98) - Army (Estimating)	+0.5	+1.0
Increased estimate for development of Selective Availability/Anti-spoofing Module (SAASM) and other developmental GPS enhancements (FY96-FY02) - Navy (Estimating)	+5.3	+10.4
Increased estimate for development of SAASM and other GPS enhancements (FY96-FY03) - AF (Estimating)	+10.9	+25.3
Adjustment for current and prior year escalation - Navy (Estimating)	-0.9	-1.8
Adjustment for current and prior year escalation - AF (Estimating)	-0.4	-0.8
RDT&E Subtotal	+15.4	+9.7
(2) Procurement		
Revised escalation indices (Economic)	--	-213.2
Quantity increase of 66135 Army hand held sets from 134362 to 200497 (FY95-FY12). (Quantity)	+28.7	+103.5

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Quantity increase of 521 for Navy aircraft sets from 3329 to 3850 (FY94-FY02). (Quantity)	+11.1	+29.8
Quantity increase of 6631 Air Force (AF) hand-held receivers from 10191 to 16822 (Quantity)	+0.7	+2.7
Quantity increase of 363 for Air Force (AF) aircraft sets from 5453 to 5816. (Quantity)	+4.0	+16.3
Decrease to recurring unit cost of aircraft sets due to shifting schedules to the right - Navy (Schedule)	-1.6	-14.5
Adjustment for current and prior year escalation - Army (Estimating)	-1.0	-3.3
Adjustment for current and prior year escalation - Navy (Estimating)	-9.4	-5.7
Adjustment for current and prior year escalation - AF (Estimating)	-8.8	-20.6
Revised estimates for Line Replaceable Unit (LRU) average unit costs for ground and small air sets (FY94-FY12) Army (Estimating)	+207.5	+300.0
Revised aircraft modification estimates based on inputs from aircraft System Program Directors (SPDs) (FY94-FY03) - AF (Estimating)	+114.6	+285.9
Increased aircraft LRU average unit cost estimates (FY94-FY03) - AF (Estimating)	+55.4	+201.5
Revised estimates for program support of ground and aircraft sets (FY94-FY12) Army (Support)	-39.7	-93.7
Increase in support estimates for air and ground sets - Navy (Support)	+39.0	+81.9
Revised estimates for aircraft support based on inputs from aircraft SPDs (FY88-03) - AF (Support)	-60.5	-210.7
Procurement Subtotal	+240.0	+458.9
(3) O & M		
Revised escalation indices (Economic)	--	-1.8
Adjustment for current and prior year escalation - Navy (Estimating)	-0.4	-0.6

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for current and prior year escalation - Air Force (AF) (Estimating)	--	-0.1
Increased estimate for User Equipment (UK) support - Navy (Support)	+0.2	+0.3
Increased estimate for aircraft support - AF (Support)	+0.4	+1.8
O & M Subtotal	+0.2	-0.4

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

NAVSTAR GPS Satellite

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
57.668	-8.070	5.937	5.294	5.386	18.009	--	2.636	29.192	86.860

NAVSTAR GPS User Equip

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.178	-0.001	-0.158	0.002	--	0.005	--	0.002	-0.150	0.028

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

a. (U) RDT&E --

(U) OPERATIONAL CNTRL SYS SPT: LORAL FEDERAL SYSTEMS, GAITHERSBURG, MD F04701-95-D-0239, CPAF/FF/FFP/T&M Award: July 21, 1995 Definitized: July 21, 1995	Initial Contract Price		
	Target	Ceiling	Qty
	\$25.0	\$26.4	0

NAVSTAR GPS, December 31, 1995

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$35.3	\$26.4	0	\$35.6	\$35.6
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date (12/22/95)			\$0.0	\$0.0
Net Change			\$0.5	\$-0.4
			\$0.5	\$-0.4

Explanation of Change:

Note: This is the first Selected Acquisition Report (SAR) in which this contract appears.

This contract includes effort under four different pricing arrangements: Cost-Plus-Award-Fee (CPAF), Cost-Plus-Fixed-Fee (CPFF), Time and Material (T&M), and Firm-Fixed-Price (FFP). The contractor's Cost Performance Report (CPR) reports on the CPAF and CPFF Contract Line Item Numbers (CLINs) only; therefore the data presented here reflects only the cost reimbursable work. The T&M and FFP CLINs represent another \$2.9M of work. The ceiling price is lower than the target price because it applies only to development of the software required for full functionality of Block IIR and the OCS Re-Architecture development. The target price applies to all CLINs currently reported in the CPR.

The cumulative cost variance is \$+0.5M. This variance is due to time lags in receiving and processing subcontractor billings. This cost variance is masking negative cost variance in System Development which results from the contractor's use of additional resources for System Design Review (SDR) preparation.

The cumulative schedule variance is \$-0.4M. This variance is due to the diversion of resources from planned activities in System Development to the completion of SDR. SDR was originally scheduled to complete in November 1995 and was actually completed in December 1995. There is no impact to the contract or the program as a result of the schedule variance.

The current contract price \$35.3M, which reflects an increase from the original contract price, is due to the addition of four system modifications and the fiscal year (FY) 96 budget for software maintenance and configuration management.

NAVSTAR GPS, December 31, 1995

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

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

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$663.6	N/A	21	\$670.0	\$690.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-14.6	\$-42.4
Cumulative Variances To Date (12/31/95)	\$-31.6	\$-19.4
Net Change	\$-17.0	\$23.0

Explanation of Change:

This firm-fixed-price (FFP) contract requires modified cost performance reporting.

Since the last Selected Acquisition Report (SAR), the cost variance has deteriorated by \$-17.0M due to negative performance in Integration and Test, Parts, and S-Band and W-Sensor. Corresponding cost variances are being experienced in Overhead and General and Administrative (G&A). Integration and Test is experiencing cost variance resulting from increased support being required for the resolution of test anomalies and from the late deliveries of flight components. The Parts variance results from additional support required for unforeseen problems and hardware issues. The S-Band and W-Sensor cost variance is due to rework issues surrounding antenna test failures.

Beginning in February 1995, Lockheed Martin Astro Space (LMAS) replanned all labor and material accounts, substituting completion milestones with interim milestones. This conversion enabled the contractor to claim portions of earned value prior to completion of the task, thereby eliminating a large portion of the incurred to date schedule variance.

The favorable change in the schedule variance (\$+23.0M) since the last SAR is due to the replan and milestones described above, as well as improved performance in the following areas: Payload; Subcontracts; Parts; and Ground Support Equipment. Schedule variance also improved in G&A and Material Handling. Payload is responsible for much of the improved schedule variance (\$+17.0M) due to the deliveries of total navigation payloads (TNPs) one and two and

NAVSTAR GPS, December 31, 1995

15. (U) Contract Information (Cont'd):
partial milestone credit for TNP three.

There is no cost impact to the program as a result of the cost variances. The contract is FFP and the overrun is being absorbed by IMAS. The schedule variance, however, has impacted three milestones. First and second vehicle deliveries slipped from April 1996 and June 1996 to August 1996 and November 1996, respectively. First launch availability slipped from August 1996 to January 1996.

The current contract price increased from \$647.2M to \$663.6M, reflecting the addition of the Operational Support System and recent Economic Price Adjustment. The contractor's estimated price at completion increased by a like amount, but now includes a \$.7M increase to cover an increase in the Cost of Money rate and a \$.5M increase due to a reassessment of the cost to complete for several teams.

(U) RECEIVERS:	Initial Contract Price		
	Target	Ceiling	Qty
SCI TECHNOLOGY, INC., HUNTSVILLE, AL F04701-90-C-0086, FFP Award: September 24, 1990 Definitized: September 24, 1990	\$17.1	N/A	599

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$63.4	N/A	2007	\$63.4	\$63.4

Explanation of Change:

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

The current quantities reflect the total quantities planned for delivery under the current contract.

Note: Contract Number F04701-90-C-0009 for Loral Federal Systems to provide development software for the NAVSTAR Global Positioning System, is more than 90% complete and will no longer be reported.

NAVSTAR GPS, December 31, 1995

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 53.5% (23 yrs/43 yrs)
- (2) Percent Program Cost Appropriated: 42.2% (\$7111.3 / \$16840.1)

NAVSTAR GPS Satellite

- (1) Percent Program Completed: 53.5% (23 yrs/43 yrs)
- (2) Percent Program Cost Appropriated: 35.4% (\$3632.3 / \$10249.5)

NAVSTAR GPS User Equip

- (1) Percent Program Completed: 59.0% (23 yrs/39 yrs)
- (2) Percent Program Cost Appropriated: 52.8% (\$3479.0 / \$6590.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program Appropriation	Prior Years (FY74-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2016)	Total
RDT&E	2623.5	98.0	146.7	1642.0	4510.2
Procurement	3787.4	541.2	637.5	7274.5	12240.6
MILCON	7.3	-	-	-	7.3
O&M	48.6	5.3	4.0	24.1	82.0
Total	6466.8	644.5	788.2	8940.6	16840.1

NAVSTAR GPS, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

NAVSTAR GPS Satellite Appropriation	Prior Years (FY74-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2016)	Total
RDT&E	1277.3	46.7	79.3	1320.0	2723.3
Procurement	2146.8	154.2	198.6	5019.3	7518.9
MILCON	7.3	-	-	-	7.3
O&M	-	-	-	-	-
Total	3431.4	200.9	277.9	6339.3	10249.5

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

NAVSTAR GPS User Equip Appropriation	Prior Years (FY74-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2012)	Total
RDT&E	1346.2	51.3	67.4	322.0	1786.9
Procurement	1640.6	387.0	438.9	2255.2	4721.7
MILCON	-	-	-	-	-
O&M	48.6	5.3	4.0	24.1	82.0
Total	3035.4	443.6	510.3	2601.3	6590.6

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NAVSTAR GPS, December 31, 1995

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

c. (U) Annual Summary -- NAVSTAR GPS Satellite

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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

1974				9.4	6.4	6.4	6.4	8.3
1975				25.5	19.1	19.1	19.1	9.8
1976				72.2	58.9	58.9	58.9	9.4
1977				12.0	10.6	10.6	10.6	4.9
1978				56.3	50.2	50.2	50.2	4.6
1979				56.0	53.3	53.3	53.3	7.1
1980				53.9	56.0	56.0	56.0	7.1
1981				88.3	101.9	101.9	101.9	9.4
1982				78.8	100.7	100.7	100.7	11.9
1983				100.6	137.4	137.4	137.4	9.2
1984				67.3	96.2	96.2	96.2	4.9
1985				67.8	100.7	100.7	100.7	3.9
1986				49.0	75.2	75.2	75.2	3.4
1987				28.7	45.1	45.1	45.1	2.8
1988				21.3	35.0	35.0	35.0	2.7
1989				15.3	25.9	25.9	25.9	3.0
1990				25.7	45.4	45.4	45.4	4.2

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1990				18.0	32.9	32.9	32.9	4.0
1991				24.8	46.9	46.9	46.9	4.3
1992				26.3	51.3	51.3	51.3	2.8
1993				28.3	56.2	55.6	55.5	2.7
1994				18.1	36.7	36.6	36.2	2.0
1995				17.1	35.3	34.1	23.6	1.9
1996				22.2	46.7	12.8	0.1	2.0
1997				36.8	79.3			2.2
1998				48.4	106.6			2.3
1999				39.8	89.5			2.2
2000				32.2	74.1			2.2
2001				30.0	70.5			2.2
2002				29.1	69.9			2.2
2003				16.9	41.5			2.2
2004				12.7	31.9			2.2
2005				12.6	32.3			2.2
2006				19.0	49.8			2.2
2007				27.5	73.7			2.2

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Recl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2008				43.8	120.0			2.2
2009				39.0	109.1			2.2
2010				33.5	95.8			2.2
2011				33.1	96.7			2.2
2012				27.1	80.9			2.2
2013				15.7	47.9			2.2
2014				11.8	36.8			2.2
2015				11.3	36.0			2.2
2016				17.5	57.0			2.2
Subtot	12			1520.7	2723.3	1288.2	1264.5	

Appropriation: 3020 Missile Procurement, Air Force

1982		0.7		13.2	20.1	20.1	20.1	9.5
1983				69.3	111.5	111.5	111.5	9.0
1984	1		25.8	152.7	256.0	256.0	256.0	8.0
1985	6		132.4	192.1	331.4	331.4	331.4	3.4
1986	9		205.4	112.6	203.4	203.4	203.4	2.7
1987	8		145.4	37.8	71.2	71.2	71.2	2.7

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1988	4		114.1	53.5	104.5	104.5	88.0	3.0
1989		33.1		33.1	67.5	67.4	66.1	4.2
1990		20.3		20.3	42.1	42.0	39.0	4.0
1991		35.3		73.7	157.5	156.1	156.1	4.3
1992	4		87.6	92.3	199.7	198.0	142.2	2.8
1993	4		88.5	85.8	189.6	187.2	123.0	2.7
1994	4		81.0	76.1	171.8	160.7	50.9	2.0
1995	5		97.7	91.7	209.6	188.0	31.0	1.9
1996	4		81.8	66.0	154.2	89.9	0.2	2.0
1997	3		83.4	83.2	198.6			2.2
1998	3		85.3	71.6	174.7			2.3
1999		25.6		69.2	172.6			2.2
2000	2		113.1	116.0	295.5			2.2
2001	2		112.7	108.0	281.2			2.2
2002	4		107.7	95.6	254.4			2.2
2003	4		90.6	79.5	216.3			2.2
2004	3		70.9	80.2	223.0			2.2
2005	3		78.2	81.2	230.6			2.2

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2006	3		85.0	83.2	241.7			2.2
2007	3		87.6	82.4	244.6			2.2
2008	3		74.7	81.4	246.9			2.2
2009	3		107.6	118.5	367.5			2.2
2010	3		104.0	103.2	326.9			2.2
2011	3		98.4	93.5	302.8			2.2
2012	3		95.5	87.3	288.8			2.2
2013	3		88.1	85.5	289.1			2.2
2014	3		76.9	81.2	280.6			2.2
2015	3		94.1	81.5	287.9			2.2
2016	3		105.4	81.5	294.2			2.2
Subtot	106	115.0	2818.9	2933.9	7508.0	2187.4	1690.1	

Appropriation: 3080 Other Procurement, Air Force

1987				1.5	2.6	2.6	2.6	2.7
1988				4.7	8.3	8.3	8.3	3.0
Subtot				6.2	10.9	10.9	10.9	

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		FY79 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

Appropriation: 3300 Military Construction, Air Force

1984				4.7	7.3	7.3	7.3	3.8
Subtot				4.7	7.3	7.3	7.3	
Grand Total	118	115.0	2818.9	4465.5	10249.5	3493.8	2972.8	

Note: Expenditures and Obligations reflect program office records as of December 31, 1995.

c. (U) Annual Summary -- NAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		FY79 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

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

1974				1.8	1.2	1.2	1.2	8.3
1975				4.4	3.3	3.3	3.3	9.8
1976				7.8	6.4	6.4	6.4	9.4
1977				1.8	1.6	1.6	1.6	4.9
1977				8.4	7.5	7.5	7.5	4.6
1978				7.4	7.0	7.0	7.0	7.1

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1979				9.3	9.7	9.7	9.7	7.1
1980				11.7	13.5	13.5	13.5	9.4
1981				13.8	17.7	17.7	17.7	11.9
1982				5.1	7.0	7.0	7.0	9.2
1983				7.5	10.7	10.7	10.7	4.9
1984				3.9	5.8	5.8	5.8	3.9
1985				7.6	11.6	11.6	11.6	3.4
1986				6.7	10.5	10.5	10.5	2.8
1987				2.7	4.5	4.5	4.5	2.7
1988				5.9	10.0	10.0	10.0	3.0
1989				5.0	8.9	8.9	8.9	4.2
1990				2.7	5.0	5.0	5.0	4.0
1991				3.3	6.3	6.3	5.3	4.3
1992								2.8
1993								2.7
1994				0.2	0.5	0.5	0.3	2.0
1995				0.2	0.5	0.5	0.4	1.9
1996				0.2	0.5	0.2		2.0

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (\$)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				0.2	0.4			2.2
1998				0.2	0.4			2.3
1999				0.2	0.4			2.2
2000				0.2	0.5			2.2
2001				0.2	0.5			2.2
Subtot	13			118.4	151.9	149.4	147.9	

Appropriation: 2031 Aircraft Procurement, Army

1986	67	3.6	4.0	7.7	13.7	13.7	13.7	2.7
1987	133	1.3	3.8	6.3	11.6	11.6	11.6	2.7
Subtot	200	4.9	7.8	14.0	25.3	25.3	25.3	

Appropriation: 2035 Other Procurement, Army

1986	70	3.8	1.6	5.6	9.2	9.2	9.2	2.8
1987	60	1.3	1.2	3.1	5.3	5.3	5.3	2.7
1988	147	7.6	4.0	11.9	21.1	21.0	20.8	3.0
1989	175	4.3	3.1	7.9	14.5	14.5	13.6	4.2
1990	1092	5.0	5.2	11.0	20.9	19.7	17.7	4.0

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1991	74	3.1	3.0	6.1	11.8	11.8	10.6	4.3
1992	37	9.3	1.3	13.6	27.2	27.2	27.0	2.8
1993	11014	4.3	8.2	13.6	27.6	27.6	25.5	2.7
1994	14318	0.3	12.5	15.6	32.4	32.4	30.1	2.0
1995	15317	0.2	10.4	15.2	32.1	31.9	18.8	1.9
1996	19912	1.4	17.5	22.4	48.4			2.0
1997	12017	1.7	13.1	11.9	26.3			2.2
1998	1217	0.1	8.3	7.9	17.8			2.3
1999	14		0.2	3.5	8.1			2.2
2000	14		0.1	3.3	7.9			2.2
2001	19		0.1	2.8	6.7			2.2
2002	15000		16.4	12.2	30.0			2.2
2003	15000		16.1	11.9	30.0			2.2
2004	15000		15.7	11.7	30.0			2.2
2005	10000		10.3	3.8	10.0			2.2
2006	10000		10.0	14.9	40.0			2.2
2007	10000		9.8	14.6	40.0			2.2
2008	10000		9.6	14.3	40.0			2.2

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2009	10000		9.4	13.9	40.0			2.2
2010	10000		9.2	13.6	40.0			2.2
2011	10000		9.0	13.3	40.0			2.2
2012	10000		8.8	13.1	40.0			2.2
Subtot	200497	42.4	214.1	292.7	697.3	200.6	178.6	
Army	200710	47.3	221.9	425.1	874.5	375.3	351.8	

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

1974				6.0	4.1	4.1	4.1	8.3
1975				8.7	6.5	6.5	6.5	9.8
1976				13.5	11.0	11.0	11.0	9.4
1977				1.8	1.6	1.6	1.6	4.9
1977				7.4	6.6	6.6	6.6	4.6
1978				3.8	3.6	3.6	3.6	7.1
1979				9.5	9.9	9.9	9.9	7.1
1980				8.8	10.1	10.1	10.1	9.4
1981				13.4	17.1	17.1	17.1	11.9
1982				22.0	30.0	30.0	30.0	9.2

NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1983				19.7	28.1	28.1	28.1	4.9
1984				39.9	59.3	59.3	59.3	3.9
1985				38.3	58.8	58.8	58.8	3.4
1986				35.8	56.2	56.2	56.2	2.8
1987				39.1	64.3	64.3	64.3	2.7
1988				29.3	49.4	49.4	49.4	3.0
1989				22.4	39.6	39.6	39.6	4.2
1990				23.1	42.2	40.9	40.3	4.0
1991				25.8	48.8	48.8	45.4	4.3
1992				25.3	49.2	48.9	45.7	2.8
1993				24.7	49.2	48.9	46.9	2.7
1994				24.3	49.2	49.2	43.8	2.0
1995				15.7	32.4	32.4	25.9	1.9
1996				13.2	27.8	12.8	2.6	2.0
1997				13.9	30.0			2.2
1998				17.0	37.5			2.3
1999				20.7	46.5			2.2
2000				2.8	6.4			2.2

NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2001				0.7	1.7			2.2
Subtot	89			526.6	877.1	738.1	706.8	

Appropriation: 1109 Procurement, Marine Corps

1989	456		1.0	2.2	4.1	4.1	4.1	4.2
1990	504		0.7	0.8	1.6	1.6	1.6	4.0
1991								4.3
1992								2.8
1993	3304	0.1	2.7	2.9	5.8	5.8	5.8	2.7
1994	557		0.4	0.4	0.8	0.8	0.4	2.0
Subtot	4821	0.1	4.8	6.3	12.3	12.3	11.9	

Appropriation: 1506 Aircraft Procurement, Navy

1988	42		2.0	2.2	4.3	4.3	4.3	3.0
1989	108		4.4	5.0	10.0	10.0	10.0	4.2
1990	121		3.9	4.6	9.6	9.6	9.0	4.0
1991	24		0.7	1.9	4.0	4.0	3.4	4.3
1992	215		10.8	17.3	38.0	38.0	18.2	2.8

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1993	200		11.3	7.0	15.5	14.6	4.4	2.7
1994	537	0.5	10.7	39.5	89.5	31.7	4.2	2.0
1995	344	0.4	5.9	18.5	42.8	38.2	8.5	1.9
1996	501	0.3	8.5	17.5	41.4	8.5	0.1	2.0
1997	437	0.2	8.8	19.0	45.9			2.2
1998	543	0.2	9.1	24.3	60.1			2.3
1999	496	0.4	6.7	26.2	66.1			2.2
2000	104	0.4	0.8	6.9	17.7			2.2
2001	98	0.4	0.7	7.0	18.5			2.2
2002	80	0.4	0.4	6.9	18.5			2.2
Subtot	3850	3.2	84.7	203.8	481.9	158.9	62.1	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987	11		0.8	0.8	1.4	1.4	1.4	2.7
1988	6		0.5	0.5	1.0	1.0	1.0	3.0
1989	11		0.7	0.7	1.5	1.5	1.5	4.2
1990	17		0.8	1.1	2.3	2.3	2.3	4.0
1991	11		0.4	0.4	0.8	0.8	0.6	4.3

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1992	11		0.5	0.8	1.8	1.8	1.1	2.8
1993	9		0.2	0.2	0.4	0.4	0.2	2.7
1994				0.1	0.3	0.2	0.1	2.0
1995				0.4	1.0	0.1		1.9
1996				1.3	3.0	0.2		2.0
1997				2.3	5.5			2.2
1998				2.2	5.5			2.3
1999				2.4	6.0			2.2
2000				1.6	4.0			2.2
Subtot	76		3.9	14.8	34.5	9.7	8.2	

Appropriation: 1810 Other Procurement, Navy

1986	62	5.7	5.8	12.1	20.0	20.0	20.0	2.8
1987	148	8.1	5.4	13.8	23.6	23.6	23.6	2.7
1988	188	1.3	5.8	7.4	13.2	13.2	13.2	3.0
1989	133	0.4	5.2	6.1	11.2	11.2	10.8	4.2
1990	79	0.6	2.8	3.8	7.2	7.2	7.0	4.0
1991	38	0.1	2.0	3.8	7.3	7.3	6.8	4.3

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Esci Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1992	130	0.1	6.6	8.5	16.9	14.5	14.5	2.8
1993	1840	0.1	4.1	4.4	8.9	8.9	7.7	2.7
1994				2.3	4.8	4.8	4.8	2.0
1995				7.4	15.7	8.6	4.0	1.9
1996				0.6	1.4	0.2		2.0
1997				2.2	4.9			2.2
1998				2.4	5.4			2.3
1999				4.1	9.5			2.2
2000				4.0	9.4			2.2
2001				4.2	10.1			2.2
Subtot	2618	16.4	37.7	87.1	169.5	119.5	112.4	

Appropriation: 1804 Operation and Maintenance, Navy

1988				1.7	2.8	2.8	2.8	3.0
1989				2.6	4.6	4.6	4.6	4.2
1990				6.8	12.5	12.5	12.5	4.0
1991				3.3	6.2	6.2	6.2	4.3
1992				3.4	6.7	6.7	6.6	2.8

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1804 Operation and Maintenance, Navy (Cont'd)

1993				2.3	4.6	4.6	4.3	2.7
1994				1.6	3.3	3.3	3.1	2.0
1995				1.4	2.8	2.8	2.6	1.9
1996				1.7	3.5	1.4	0.3	2.0
1997				1.4	3.0			2.2
1998				1.5	3.4			2.3
1999				1.0	2.3			2.2
2000				1.0	2.3			2.2
2001				1.0	2.4			2.2
Subtot				30.7	60.4	44.9	43.0	
Navy	11454	19.7	131.1	869.3	1635.7	1083.4	944.4	

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

1974				1.5	1.0	1.0	1.0	8.3
1975				6.4	4.8	4.8	4.8	9.8
1976				19.5	15.9	15.9	15.9	9.4
197T				3.1	2.7	2.7	2.7	4.9
1977				15.5	13.8	13.8	13.8	4.6

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16c. (U) Program Funding Summary (Cont'd):
 HAVSTAR GPS User Equip

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Honrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1978				14.4	13.7	13.7	13.7	7.1
1979				18.9	19.6	19.6	19.6	7.1
1980				29.8	34.4	34.4	34.4	9.4
1981				19.2	24.5	24.5	24.5	11.9
1982				20.5	28.0	28.0	28.0	9.2
1983				18.1	25.9	25.9	25.9	4.9
1984				13.3	19.8	19.8	19.8	3.9
1985				13.5	20.7	20.7	20.7	3.4
1986				16.4	25.8	25.8	25.8	2.8
1987				17.2	28.3	28.3	28.3	2.7
1988				22.4	37.8	37.8	37.8	3.0
1989				21.7	38.3	38.3	38.3	4.2
1990				18.0	32.8	32.8	30.2	4.0
1991				6.7	12.6	12.5	12.1	4.3
1992				7.6	14.7	14.3	13.3	2.8
1993				10.2	20.3	20.2	18.2	2.7
1994				7.9	16.0	15.9	13.9	2.0
1995				7.2	14.9	12.7	5.6	1.9

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$		Excl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1996				7.7	16.3	4.8	0.5	2.0
1997				15.1	32.5			2.2
1998				11.2	24.6			2.3
1999				10.9	24.6			2.2
2000				10.0	23.1			2.2
2001				7.6	17.8			2.2
2002				7.4	17.9			2.2
2003				7.5	18.3			2.2
2004				7.5	18.7			2.2
2005				7.4	19.1			2.2
2006				7.4	19.5			2.2
2007				7.4	19.9			2.2
2008				7.5	20.4			2.2
Subtot	146			443.6	739.0	468.2	448.8	

Appropriation: 3010 Aircraft Procurement, Air Force

1985		3.2		4.7	8.0	8.0	8.0	3.4
1986	70	5.5	7.7	23.8	42.4	42.4	42.4	2.7

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

1987	299	4.5	20.6	40.3	74.8	74.8	74.8	2.7
1988	351	6.9	19.3	53.8	104.8	104.8	104.8	3.0
1989	327	23.3	15.8	58.6	117.8	117.8	117.8	4.2
1990	207	5.1	9.0	28.3	58.6	58.6	58.0	4.0
1991	36	4.1	8.0	12.8	27.6	27.6	27.6	4.3
1992	65	20.5	9.1	47.4	103.9	103.9	92.9	2.8
1993	207	16.3	4.6	41.7	92.9	89.0	80.5	2.7
1994	194	36.8	15.2	69.9	158.5	134.7	87.6	2.0
1995	285	36.4	21.5	78.0	180.2	94.8	60.1	1.9
1996	460	49.9	52.6	123.5	291.8	32.3	0.9	2.0
1997	901	23.5	99.7	146.1	352.9			2.2
1998	908	10.3	114.7	145.9	360.3			2.3
1999	757	9.1	90.4	114.2	288.1			2.2
2000	261	3.7	62.4	77.1	198.7			2.2
2001	145	1.8	33.2	39.6	104.3			2.2
2002	93	1.5	30.6	43.7	117.7			2.2
2003		17.4		31.3	86.2			2.2
2004				28.4	79.9			2.2

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (\$)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2005				28.4	81.7			2.2
2006				28.4	83.5			2.2
2007				28.4	85.3			2.2
2008				28.4	87.2			2.2
Subtot	5566	279.8	614.4	1322.7	3187.1	888.7	755.4	

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

1986	87	1.1	2.3	6.2	10.3	10.3	10.3	2.8
1987	121	0.6	2.2	6.4	11.0	11.0	11.0	2.7
1988	757	0.1	3.8	8.3	14.7	14.7	14.7	3.0
1989	445	0.1	5.7	7.1	13.1	13.1	13.1	4.2
1990	179	0.1	4.3	5.7	10.7	10.7	10.7	4.0
1991								4.3
1992	101		0.1	2.1	4.2	4.2	4.2	2.8
1993	2512		2.2	3.0	6.1	6.1	4.8	2.7

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

1994	1702		1.4	2.2	4.6	4.6	3.8	2.0
1995	795		0.8	1.7	3.7	3.6	1.0	1.9
1996	812		0.4	0.5	1.0			2.0
1997	900		0.9	1.5	3.4			2.2
1998	705		1.2	1.4	3.2			2.3
1999	1108		1.5	1.8	4.1			2.2
2000	1243		1.4	1.7	4.0			2.2
2001	1253		1.4	1.7	4.1			2.2
2002	566		0.6	0.9	2.1			2.2
2003	562		0.6	0.8	2.1			2.2
2004	594		0.6	0.9	2.2			2.2
2005	589		0.6	0.8	2.2			2.2
2006	620		0.6	0.9	2.3			2.2
2007	617		0.6	0.8	2.3			2.2
2008	554		0.5	0.9	2.4			2.2
Subtot	16822	2.0	33.7	57.3	113.8	78.3	73.6	

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NAVSTAR GPS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Years	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3400 Operation & Maintenance, Air Force

1992				0.3	0.5	0.5	0.5	2.8
1993				1.2	2.3	2.3	2.3	2.7
1994				0.6	1.3	1.3	1.3	2.0
1995				0.5	1.0	1.0	0.6	1.9
1996				0.9	1.8	0.1		2.0
1997				0.5	1.0			2.2
1998				0.5	1.0			2.3
1999				0.5	1.1			2.2
2000				0.5	1.1			2.2
2001				0.5	1.2			2.2
2002				0.5	1.2			2.2
2003				0.5	1.3			2.2
2004				0.5	1.3			2.2
2005				0.5	1.3			2.2
2006				0.5	1.4			2.2
2007				0.5	1.4			2.2
2008				0.5	1.4			2.2
Subtot				9.5	21.6	5.2	4.7	

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

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (t)
		Monrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3400 Operation & Maintenance, Air Force (Cont'd)

USAF	22534	281.8	648.1	1833.1	4061.5	1440.4	1282.5	
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Appropriation: 0400 RDT&E, Defense Agencies

1989				0.1	0.2	0.2	0.2	4.2
1990				1.2	2.1	2.1	2.1	4.0
1991				0.2	0.4	0.4	0.4	4.3
1992				0.1	0.1	0.1	0.1	2.8
1993				0.2	0.3	0.3	0.3	2.7
1994				0.2	0.4	0.3	0.3	2.0
1995								1.9
1996				3.2	6.7			2.0
1997				2.1	4.5			2.2
1998				1.8	3.9			2.3
1999				0.1	0.3			2.2
Subtot				9.2	18.9	3.4	3.4	
DoD				9.2	18.9	3.4	3.4	
Grand Total	234698	348.8	1001.1	3136.7	6590.6	2902.5	2582.1	

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

NAVSTAR GPS User Equip

Appropriation 0400 Research Development Test and Evaluation (RDT&E),
 Defense Agencies is Marine Corps RDT&E - Program Element (PE)
 0206626M-1319 Appropriation for fiscal years (FY) 89-FY94 and
 Department of Defense 0400 Research Development and Test for
 FY96-FY99.

Expenditures and Obligations reflect program office records as of
 February 29, 1996.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		Plan/Actual
	RDT&E	12/12
	Procurement	28/28

All delivered units represent Block II/IIA.

b. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
● Qty 0 - ● Peak Rate: 0.6/mo			
FY 79 Base-Year \$	20.336	27.879	25.000
Then Year \$	54.812	50.814	0.000
● Qty 0 (1st three years) - ● Peak Rate: 0.0/mo			
FY 79 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

Note: Sections a and b reflect data for Block II/IIA satellites.

a. (U) Deliveries to Date --		Plan/Actual
	RDT&E	248/248
	Procurement	43004/43004

b. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
● Qty 26889 - ● Peak Rate: 390/mo			
FY 79 Base-Year \$	0.1	0.1	0.1
Then Year \$	0.2	0.2	0.0
● Qty 0 (1st three years) - ● Peak Rate: 0/mo			
FY 79 Base-Year \$	0.0	0.0	0.0
Then Year \$	0.0	0.0	0.0

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

a. (U) Assumptions and Ground Rules --

Operations and support costs include all costs of operating, maintaining, and supporting the NAVSTAR Global Positioning System (GPS) spacecraft from the dedicated Master Control Station (MCS) located at Falcon Air Force Base (AFB) CO. Also included are the costs for operating, maintaining, and supporting four dedicated GPS Ground Antennas (GAs) (located at Cape Canaveral Air Force Station (AFS) FL, Kwajalein Atoll, the Ascension Islands, and Diego Garcia); and five monitor stations (located at Falcon AFB, Maui, HI, Kwajalein Atoll, the Ascension Islands, and Diego Garcia). Satellite operations at the MCS include mission planning, mission payload operations, and monitoring of satellite state of health. GAs transmit navigation data uploads and commands to the GPS spacecraft and receive telemetry data from the spacecraft. Monitor stations receive mission payload data and transfer this data to the MCS to ensure spacecraft are operating as desired. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements.

There is no applicable antecedent program.

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

Cost Element	Avg Annual Cost Per NAVSTAR GPS Sat	Avg Annual Cost Per Antecedent
O&M	1.5	N/A
Total	1.5	N/A

Note: Costs reflect funds controlled by the System Program Director as included in the FY97 President's Budget.

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

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OGM	16.7	---	---	---	16.7
Total	16.7	---	---	---	16.7

Note: Costs reflect funds controlled by the System Program Director as included in the FY97 President's Budget.

NAVSTAR GPS User Equip

a. (U) Assumptions and Ground Rules --

(1) The operations and support costs are the direct costs to repair, replenish and support the Global Positioning System (GPS) user equipment. The maintenance cost includes the material and labor costs at the organizational and depot levels. The training costs are necessary to maintain the required quantity of maintenance and operations personnel. The software support costs include all costs to provide life cycle software engineering for GPS user equipment. The support equipment support cost includes the cost of all necessary support and maintenance of the GPS user equipment. The sustaining investment costs include the cost of replenishment spares of air, sea, and ground sets, including their respective batteries and support equipment. Costs reflect updates for the fiscal year (FY)97 President's Budget.

There is no applicable antecedent program.

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

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

Cost Element	Avg Annual Cost Per NAVSTAR GPS User	Avg Annual Cost Per Antecedent
BELOW DEPOT LEVEL	0.0	N/A
DEPOT LEVEL	5.3	N/A
TRAINING	0.0	N/A
TRANSPORTATION	0.1	N/A
SOFTWARE SUPPORT	1.2	N/A
SE SUPPORT	0.1	N/A
SUSTAINING INVESTMENT	28.5	N/A
SYSTEM/PROJECT MGT	3.9	N/A
Total	39.1	N/A

Note: Current estimates for below depot level and training are less than \$50,000 and round down to zero (0.0).

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18c. (U) Operating and Support Costs (Cont'd):
NAVSTAR GPS User Equip

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OGM	---	---	---	---	---
Air Force	5.8	0.5	0.4	8.8	15.5
Navy	25.2	---	---	---	25.2
Marine	0.3	---	---	---	0.3
Army	---	---	---	---	---
Total	31.3	0.5	0.4	8.8	41.0

AF-13 JTIDS

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SELECTED ACQUISITION REPORT (RCS:DP-COMP(Q&A)823)
PROGRAM: JTIDS

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Joint Tactical Information Distribution System (JTIDS)

2. (U) DoD Component: USAF

Joint Participants:
USA/USAF/USMC/USN/USDO

3. (U) Responsible Office and Telephone Number:

JTIDS Joint Program Office (JPO)
ESC/TG-4
175 Vandenberg Drive
Hanscom AFB, MA 01731-2138

GM-15 DAVID CARSTAIRS
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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by: JTIDS Security Classification Guide, Para 4.1.1.1
Derived from: ESC/TS
Declassify on: OADR~~

(THIS PAGE IS UNCLASSIFIED)

~~CONFIDENTIAL~~

SAF/PAS

96-298 - 1

96-C-0434

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

EDT&E:

PE 0205604N
PE 0604232N (Shared) Project X1977
PE 0604702A Project D451
PE 0604754F
PE 0604771D (Shared) Project XP771
PE 0604861C Project 2200
PE 0603713A (Shared) Project D370
PE 0603869C Project 2262
PE 0603216C (Shared) Project 2210

5. (U) Related Programs:

F-15; E-3 AMACS; NATO Airborne Early Warning and Control System; E-2C Hawkeye Carrier-Based Airborne Early Warning Aircraft; E-8 (JSTARS); Tactical Air Operations Module (TAOM); Modular Control Element (MCE); Air Operations Center (AOC); Airborne Battlefield Command and Control Center (ABCCC); Rivet Joint; Air Intelligence Agency; F-14 Tomcat; Aircraft Carrier (CV); Guided Missile Cruiser (CG); Guided Missile Destroyer (DDG); Army Data Distribution System (ADDS); Forward Area Air Defense (FAAD); High and Medium Air Defense (HIMAD); Ballistic Missile Defense Organization (BMDO) Theatre High Altitude Area Defense (THAAD); BMDO CORPS Surface-to-Air Missile (CORPS SAM).

6. (U) Mission and Description:

The Joint Tactical Information Distribution System (JTIDS) Class 2 family of terminals will provide improved combat capability in fighter aircraft, command and control centers, and surface air defense units by providing near real-time, netted, jam-resistant, secure data and voice communications. Real-time, high capacity data transfer between weapons platforms and C3 systems is required for more effective management as the density of the air combat environment increases. The JTIDS Class 2 terminal development is a Joint Service Program with the Air Force as the Lead Service. The family of JTIDS Class 2 terminals consists of the Class 2, the Class 2H (which includes a high power amplifier group, typically for command and control platforms), and the Class 2M (smaller terminal for mobile Army platforms). The United Kingdom (UK) is buying Class 2 terminals for their air defense fighters and ships and both the UK and France are buying Class 2H terminals as part of their E-3 acquisition. The Class 2 terminals use the Tactical Digital Information Link (TADIL-J) (NATO Link 16) message standard. The Class 2 terminal does not replace any existing DOD system.

The JTIDS SAR reflects only the EDT&E program. Production quantities and funding for the individual platforms are included in the budget lines for those specific programs.

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7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Full Scale Engineering Development (FSED) of the JTIDS Class 2 Time Division Multiple Access (TDMA) terminal for Air Force and Army applications was authorized by DSARC IIA, 13 Jan 81. Singer-Kearfott Division was awarded the FSED contract for Air Force and Army test and evaluation on 14 Jan 81.

A DSARC IIB approved Full-Scale Development (FSD) for the Navy Distributed TDMA (DTDMA) JTIDS terminal in Jan 82. The Secretary of the Navy subsequently directed use of the Air Force-developed Class 2 TDMA terminals for Navy and Marine Corps platforms in Oct 85. Also in 1985, the Army directed development of a reduced-size, data-only terminal, designated the Class 2M, to meet the needs of the Forward Area Air Defense (FAAD)/High and Medium Air Defense (HIMAD) programs.

Development of a high-powered Class 2 terminal, designated the Class 2H, was initiated in March 1986 to meet the needs of the Air Force E-3A. The Modular Control Equipment (MCE), Tactical Air Operations Module (TAOM), E-2 and Ship platforms were later added to the 2H development.

The basic Class 2 terminal completed initial DT&E/IOT&E in Oct 86, with reliability, maintainability and interoperability deficiencies observed. The Multi-Service Initial Operational Assessment (IOA) in Apr 87 judged system performance to be marginal. Successful completion of Phase I Development Test/Operational Assessment (DT/OA) in May 89 verified corrections of DT&E/IOT&E deficiencies. The DAB IIIA in Oct 89 approved Low-Rate Initial Production (LRIP) of Air Force and Navy Class 2 terminals, but also directed reliability improvements. The JPO established a Reliability Development/Growth program in Jan 90 which successfully demonstrated Class 2/2H/2M terminal Mean-Time-Between-Failure (MTBF) thresholds between Nov 90 and Aug 94.

LRIP contracts for 34 LRIP (Lot 1) terminals were awarded to Plessey Electronic Systems Corporation (FSD leader) and Rockwell International Corporation (FSD follower) in Mar 90. An additional 171 LRIP terminals were awarded yearly on Lots 2-5 from Sep 91 to Oct 94. LRIP for the Navy F-14D, E-2C, and Ships was approved by a 12 Mar 91 Navy Program Decision Meeting (NPDM). NPDM meetings in Sep 92 and Aug 93 approved subsequent Navy LRIP Lot buys.

The first two Tri-Service demonstrations were successfully completed in Nov 91. The Navy Operational Test and Evaluation Force (OPTEVFOR) evaluation of Feb-Mar 92 at-sea tests was potentially operationally suitable/effective. The Commander OPTEVFOR report in Jan 93 withdrew the Navy's operational evaluation due to uncorrected

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7a. (U) Program Highlights (Cont'd):

terminal deficiencies. The JPO coordinated a joint strategy to correct Navy terminal deficiencies and complete Navy testing. The Navy then conducted additional DT/OT events in 1993 to verify terminal readiness for TECHEVAL and OPEVAL, scheduled for 1994.

Three JTIDS Affordability and Manufacturing Technology Demonstration (AMTD) contracts were awarded 30 Jun 93 to prove the feasibility of producing a low-cost JTIDS terminal.

The first operational deployment of a fully integrated JTIDS Class 2 platform occurred in Aug 93 when the Airborne Battlefield Command and Control Center (ABCCC) Program began flying a JTIDS-equipped C-130 to support "Operation Deny Flight" in Bosnia. HQ ACC began a one-year Operational Special Project (OSP) at Mt. Home AFB, ID, with JTIDS-equipped F-15C aircraft in Sep 93 to evaluate data link utility in fighter aircraft.

The Army declared air-ground Initial Operating Capability (IOC) of the Class 2M terminal on 23 Sep 93.

Navy TECHEVAL successfully verified correction of previous terminal integration deficiencies in Mar 94. OPEVAL completed in Aug 94. OPEVAL report released 19 Oct 94 verified that JTIDS was operationally effective/suitable and strongly supported JTIDS fleet introduction. Successful completion of OPEVAL supported the critical exit criterion for the Class 2/2H Milestone III Decision in Feb 95.

The F-15 Fighter Data Link (FDL) Operational Special Project (OSP) Interim Report, per Sep 94 USAFWTC Message, determined that the JTIDS Class 2 F-15 terminal substantially increases fighter effectiveness and acts as a force multiplier.

President's Budget Decision (PBD) removed the Army's production funds in FY95, breaching several Class 2M Acquisition Program Baseline (APB) parameters. The Army and Ballistic Missile Defense Office (BMDO) briefed revised Class 2M requirements to the OSD C3I Committee in Aug 94, allowing the JPO to take the necessary actions to support the Class 2M Low-Rate Initial Production (LRIP) Decision in Feb 95. The Army Class 2M Limited User's Test (LUT) was completed in Nov 94. Emerging results indicated that the LUT successfully demonstrated operational effectiveness/suitability for the air/ground Class 2M requirement. Successful completion of the LUT supported the Class 2M LRIP Decision.

Air Force Systems Acquisition Review Council (AFSARC) to support a Class 2/2H Milestone III and Class 2M Low-Rate Initial Production (LRIP) Decision successfully completed 1 Feb 95. On 1 Mar 95,

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7a. (U) Program Highlights (Cont'd):

USD(A&T) approved full-rate production for the Class 2/2M terminal and Low-Rate Initial Production for the Class 2M terminal.

b. (U) Significant Developments Since Last Report --

On 6 Feb 95, the PRO for Space, Communications and Sensors informed the Joint Program Office (JPO) that it is the intent of the Navy to begin to transition from procuring JTIDS terminals to procuring the Multifunctional Information Distribution System (MIDS) terminals in FY99. The Navy is also working to accelerate this date to FY97. This would include approximately 138-185 terminals with an associated estimated cost of \$200M-\$300M from the Navy to the MIDS program. In addition, the Navy has realigned their RDT&E JTIDS funds in FY97-FY00 to the MIDS program.

On 3 Mar 95, the first full-rate production contract share was awarded to GEC-Marconi for \$25.2M for 24 Class 2H E-2C, 4 Class 2 MCE, and 2 Submarine terminals. On 8 Mar 95, the second contract share was awarded to Rockwell Collins for \$18.8M for 19 Class 2H Ship and 1 Class 2 Joint STARS terminals.

Per direction in the OUSD(A&T) Memorandum dated 15 Aug 95, Subject: Multifunctional Information Distribution System (MIDS) Production Transition Acquisition Decision Memorandum (ADM), the MIDS Integrated Product Team (IPT) will competitively acquire reduced function LINK-16 terminals that meet the MIDS architecture standards for F-15 fighters. The Joint Program Office (JPO) is working concurrently with the MIDS IPT and Air Combat Command (ACC) to support this Fighter Data Link effort.

The JPO began providing integration support for the Army Class 2M Patriot and the 390th F-15 squadron at Mountain Home AFB. This resulted in the successful completion of the first JTIDS-equipped F-15 squadron.

On 15 Sep 95, the JPO awarded a contract to meet an urgent CECOM requirement to procure Class 2M spares to support the delivery of Class 2M terminals procured in 1994 for Theatre Area Air Defense (TEAAD).

The JTIDS system is expected to satisfy all mission requirements.

This will be the final Selected Acquisition Report (SAR) since the program is more than 90% expended.

c. (U) Changes Since As Of Date --

On 5 Feb 96, the Centralized Software Support Activity (CSSA) Initial Operational Capability occurred. The CSSA is now the primary US

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7c. (U) Program Highlights (Cont'd):

Government facility for the investigation of JTIDS software Material Improvement Projects.

8. (U) Threshold Breaches:

There are no breaches to the approved DAR Acquisition Program Baseline (APB) dated 15 March 1995. Numm-McCurdy Unit Cost Reporting is not applicable since there are no fully-configured end items.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Program Initiation	MAR 76	N/A	MAR 76
Class 2 TDMA ADM Delivery	AUG 78	N/A	AUG 78
Milestone II	JAN 81	N/A	JAN 81
TDMA Development Contract Award	JAN 81	N/A	JAN 81
Preliminary OT&E	JAN 81	N/A	JAN 82
Delivery of 1st FSD Terminal			
Class 2 (F-15)	JUL 83	JUN 84	JUN 84
Class 2 (F-14)	N/A	SEP 89	SEP 89
Class 2H (E-3)	N/A	OCT 88	OCT 88
Class 2H (E-2)	N/A	DEC 89	DEC 89
Class 2H (Ships)	N/A	DEC 89	DEC 89
Class 2/2H (JSTARS)	N/A	NOV 87	NOV 87
Class 2/2H (MCE)	N/A	OCT 90	OCT 90
Class 2M (FAAD)	N/A	MAR 88	MAR 88
IOT&E Complete			
Class 2 (F-15)	JAN 86	APR 87	APR 87
Class 2H (E-3)	N/A	MAR 92	MAR 92
Class 2/2H (F-14D, E-2C, Ships)	N/A	AUG 94	AUG 94
Class 2/2H (JSTARS)	N/A	FEB 96	MAY 96 (Ch-1)
Class 2 (MCE)	N/A	APR 97	APR 97
Class 2M	N/A	NOV 96	NOV 96
Operational Effectiveness Demonstration	N/A	NOV 93	NOV 93 (Ch-2)
Class 2 (ABCCC)			
Integration Certification (Phase I)	N/A	JUN 94	JUN 94 (Ch-2)
Class 2 (MAOC)			
Integration Class 2 (River Joint)	N/A	JUN 96	OCT 96 (Ch-2)
Complete Multi-Service Operational Test	N/A	NOV 96	NOV 96
Milestone IIIA (Tri-Service DAB)			
Class 2 (F-15)	JUN 86	SEP 89	SEP 89
Class 2 (F-14)	N/A	SEP 89	SEP 89

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

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Class 2H (E-3)	N/A	SEP 89	SEP 89
Class 2H (E-2)	N/A	SEP 89	SEP 89
Class 2H (Ships)	N/A	SEP 89	SEP 89
LRIP Decision Class 2M	N/A	FEB 95	MAR 95 (Ch-2)
LRIP Contract Award			
Class 2	N/A	MAR 90	MAR 90
Class 2H	N/A	JUL 91	JUL 91
Class 2M	N/A	NOV 95	MAR 96 (Ch-2)
Delivery of 1st Production Unit			
Class 2	JUN 88	MAR 92	MAR 92
Class 2H	N/A	JUN 93	MAY 93
Class 2/2H	N/A	FEB 95	MAR 95 (Ch-3)
Milestone III			
Full Rate Contract Award			
Class 2/2H	N/A	MAR 95	MAR 95
Class 2M	N/A	NOV 97	MAY 97
Milestone III (Tri-Service DAB)			
Class 2M	N/A	MAR 97	MAR 97
Class 2M	N/A	MAY 97	
IOC			
Class 2H	SEP 88	FEB 94	FEB 94
Class 2M (FAAD)	N/A	SEP 93	SEP 93
Organic Organizational Support	N/A	SEP 93	SEP 93 (Ch-2)
Capability Class 2/2H			
Organic Organizational Support	N/A	FEB 98	FEB 98 (Ch-2)
Capability Class 2M			
Depot Support Available Class 2/2H	N/A	MAY 94	MAY 94 (Ch-2)
Depot Support Available Class 2M	N/A	MAR 98	MAR 98 (Ch-2)

b. (U) Previous Change Explanations --

Actual delivery dates for the first PSD terminals for the Navy was Sep 89 and the Army was Mar 88. Milestone IIIA for the Air Force was delayed one month by the DAB committee to Sep 89. Proposal preparation and funding constraints delayed production contract award to Feb 90. Due to this delay, delivery of the first production unit for the Air Force (F-15) slipped to Apr 92. Full production for the Army Class 2M was delayed until Oct 92 due to program restructuring and Army funding constraints. Milestone IIIB slipped to Oct 93 due to completion of exit criteria to the 11 Oct 89 JTIDS Milestone IIIA ADM. The Army Program was restructured changing Milestone IIIA to Sep 93 and Milestone IIIB to TED. Based on ASD/C3I direction to rebaseline Milestone IIIB to Oct 93,

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

full-rate contract award dates slipped for AF E-3, JSTARS and MCE to Feb 94. IOT&E milestones, externally managed platforms, slipped for E-3 to Sep 91, JSTARS to Sep 95 and MCE to Nov 95 due to reasons unrelated to the JTIDS terminal. The 1st FSD terminal for MCE was delivered in Oct 90 vs Jun 90. A revised Acquisition Program Baseline (APB) was signed 10 Jul 91. The Army will now conduct a Milestone III in Oct 93. The E-3 Program Office informed the JPO that E-3 restructured and the IOT&E date slipped from Sep 91 to Dec 91. Milestones were combined to simplify reporting externally managed platforms by class of terminal versus by individual platform. The E-3 IOT&E date slipped from Dec 91 to Feb 92 due to rebaselining of the program. The MCE IOT&E date (Nov 94) was erroneously reported in the Sep 91 SAR. In the Dec 92 SAR, the Navy slipped completion of OPEVAL from Jun 93 to May 94 due to scheduling conflicts with Navy assets and the requirement for additional developmental and operational testing required by OPTEVFOR prior to OPEVAL. The E-3 Program Office informed the JPO that the E-3 IOT&E was completed in Mar 92 vs Feb 92. The Army Class 2M (FAAD) Milestones were "to be determined" as the program was non-executable as currently structured. The first Class 2 terminal was delivered early in Mar 92 vs Apr 92. Milestone IIIB (Now Milestone III) for the Class 2/2H slipped to Feb 95 vs Oct 93 due to the slip in Navy OPEVAL as the Navy OPEVAL is an ADM requirement prior to the Milestone III decision. Full-rate contract award for the Class 2/2H slipped from Feb 94 to Mar 95 due to the Milestone III slip. IOC for the Class 2H slipped from Sep 93 to May 94 due to the revised Carl Vinson Battle Group deployment schedule. In the Dec 93 SAR, the Navy slipped completion of OPEVAL from May 94 to Jul 94 due to scheduling conflicts with Navy assets and the requirement for additional development testing and operational testing required by OPTEVFOR prior to OPEVAL. Joint STARS IOT&E will complete in Nov 95 vs Sep 95 due to test restructuring. MCE IOT&E will complete in Nov - 96 vs Nov 95 due to test restructuring. The Army's Class 2M Forward Area Air Defense program was restructured to reflect the Army's Sep 93 re-validation of the air-ground Class 2M program with funding through Low-Rate Initial Production deliveries and the Ballistic Missile Defense Organization Jul 93 decision to join the Class 2M program. 2M IOT&E and Multi-Service Operational Test (MS-OT-III) in Sep 96 vs TBD; Full-Rate Contract Award in Jun 97 vs TBD; and delivery of the 2M First Production Unit in Jun 99 vs TBD. Full-Rate Contract Award for Class 2/2H was rescheduled for May 95 vs Mar 95. Navy Class 2H Initial Operational Capability (IOC) was rescheduled for Feb 94 vs May 94 due to the revised Carl Vinson Battle Group deployment schedule. Army declared IOC for the Class 2M in Sep 93 vs TBD based on the fielding of Class 2M development units. Navy OPEVAL completed in Aug 94 vs Jul 94 due to scheduling conflicts with Navy assets and the requirement for additional developmental and operational testing required by OPTEVFOR prior to

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

OPEVAL. Joint STARS IOT&E was rescheduled for Feb 96 vs Nov 95 due to test restructuring. MCE IOT&E was rescheduled for Apr 97 vs Nov 96 due to test restructuring. Army Class 2M IOT&E and Multi-Service Operational Test (MS-OT-III) was rescheduled for Nov 96 vs Sep 96 due to test restructuring to support Class 2M Milestone III Decision; Full-Rate Contract Award was rescheduled to May 99 vs Jun 97; and delivery of the 2M First Production Unit is May 99 vs Jun 99. Upon approval of a new Acquisition Program Baseline (APB) which will include a Low-Rate Initial Production (LRIP) Decision (Feb 95) and Contract Award for the Army's FAAD Class 2M terminals (Nov 95), the Army will receive their First Production Unit in Nov 97 and EMDO will receive their First Production Unit in May 99. Full-rate Contract Award for the Class 2/2H was rescheduled to Mar 95 vs May 95 to meet Navy requirements.

c. (U) Current Change Explanations --

(Ch-1) The Joint STARS Program Office informed the Joint Program Office (JPO) that the JSTARS IOT&E will be completed in May 96 vs Feb 96 due to test restructuring.

(Ch-2) The 15 Mar 95 DAE approved Acquisition Program Baseline (APB) added these milestones in support of the 1 Mar 95 Class 2/2H Milestone III Decision and the Class 2M Low-Rate Initial Production Decision.

(Ch-3) The Milestone III Decision for the Class 2/2H terminals occurred on 1 Mar 95 vs Feb 95.

(Ch-4) Delivery of 1st Production Unit for the Class 2M is now scheduled for Nov 97 vs May 99 based on Low-Rate Initial Production Decision contract award.

d. (U) References --

(U) Development Estimate:

Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal FSED)"; Decision Coordinating Paper (DCP), dated 31 March 1981.

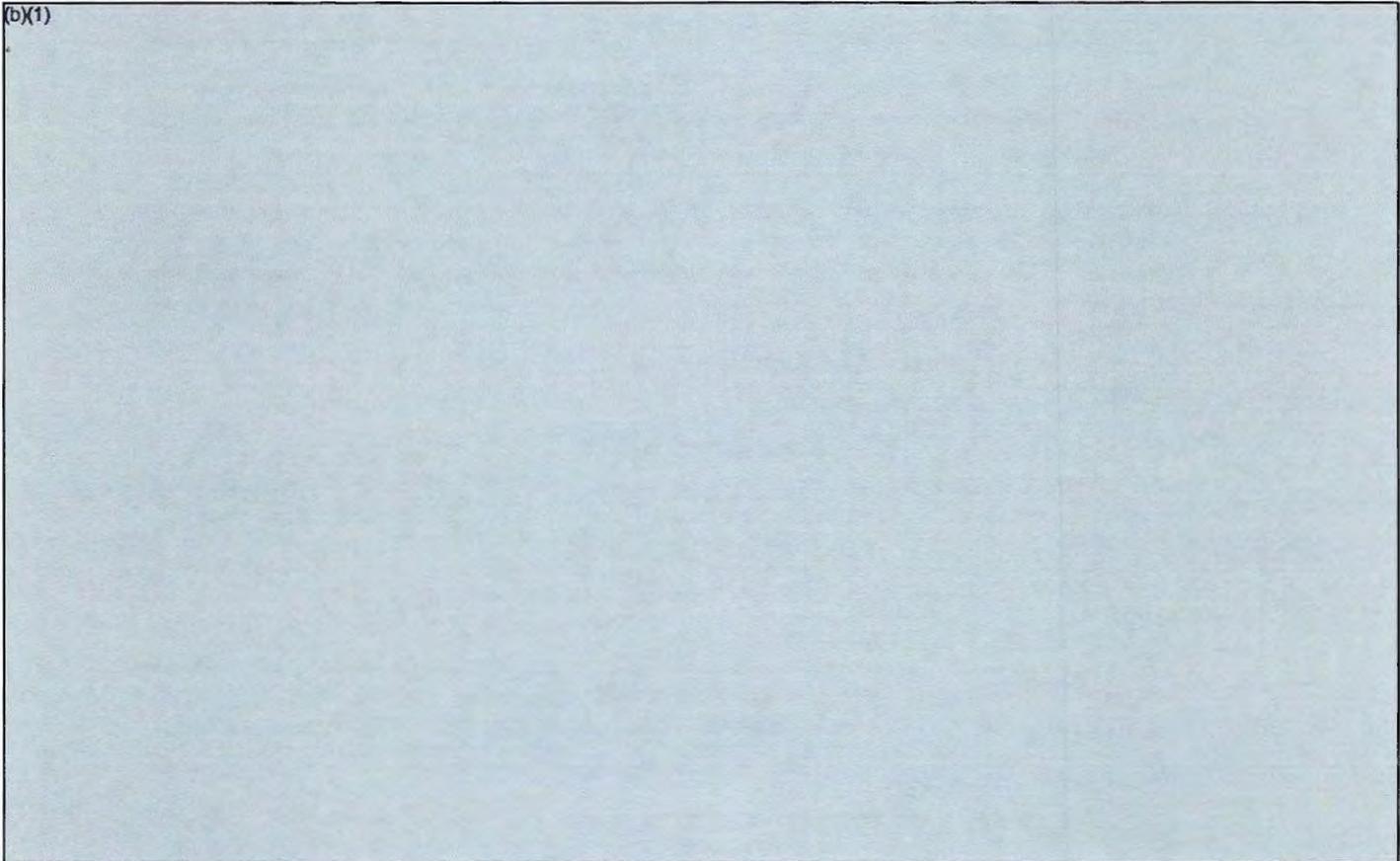
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 15, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program		Demonstrated	Current	(Ch-1)
		Objective/Threshold		Perf	Estimate	
Communications Capability (Class 2/2H)	N/A	DATA/ VOICE	/ DATA/ VOICE	DATA/ VOICE	DATA/ VOICE	
- Voice Channels Per Net	3	N/A	/ N/A	2	2	
- Coded Data Rate (double pulse Tx or Rx) (Kbps)	28.8	N/A	/ N/A	115.2	115.2	
- Coded Message Error Probability	.01	N/A	/ N/A	.01	.01	
MTBF (hr) (Lab) Class 2	500	N/A	/ N/A	530	500	

(b)(1)



A/ 310NM was demonstrated in the normal range mode; 495M was demonstrated in the extended range mode.

B/ Operational Special Project (OSP) at Mt Home AFB, ID. Mt Home

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

OSP demonstrated an MTBCF of 221 hours from Sep 93 through Sep 94.

(b)(1)

ACRONYM:

MTBF - Mean Time Between Failure

MTBCF - Mean Time Between Critical Failure

MTBOMF - Mean Time Between Operational Mission Failure

b. (U) Previous Change Explanations --

Packed-4 messages (thus, yielding 115.2 kbps data rate) during Post-DAB Phase I DT&R (Oct 89 - Nov 90). 1200 nm relay range demonstrated. Based on the revised Acquisition Program Baseline (APB), dated 10 Jul 91, Numbers of Nets and Rel NAV Accuracy at 150 nm (ft) performance characteristics were deleted and Ranging Accuracy below 150 nm (ft) was added. Ranging Accuracy below 150 nm (ft) for Demonstrated Performance and Current Estimate were erroneously reported in the 1991 and 1992 SARs.

c. (U) Current Change Explanations --

(Ch 1) On 12 Jan 95, the Joint Requirements Oversight Council (JROC) reviewed and validated key performance parameters in support of the Defense Acquisition Board (DAB) Milestone III Decision for the Class 2/2H terminal and the Low-Rate Initial Production (LRIP) Decision for the Class 2M terminal.

(Ch 2) The 15 Mar 95 DAE approved Acquisition Program Baseline (APB) added this sub-system parameter for the Class 2M terminal.

d. (U) References --

(U) Development Estimate:

Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal PSED)"; Decision Coordinating Paper (DCP), dated 31 March 1981.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 15, 1995.

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

	Development	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	309.0	1672.4	1493.6
Procurement	0.0	765.7	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 81 Base-Year \$	309.0	2438.1	1493.6
Escalation	73.5	1398.6	596.2
Development (RDT&E)	(73.5)	(711.8)	(596.2)
Procurement	(0.0)	(686.8)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	382.5	3836.7	2089.8
b. (U) Quantity --			
Development (RDT&E)	0	24	0
Procurement	0	793	N/A
Total	0	817	0

Note: Excludes 214 RDT&E prototypes from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs --	
United Kingdom Royal Navy	\$5.2M
French Navy	\$8.4M
Italian Navy	\$5.0M

Deliveries to date are 3 development terminals for the United Kingdom Royal Navy; 1 development terminal has been delivered and a commitment for 2 production terminals for France; and a commitment for 2 production terminals for Italy.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Secretary of Defense Decision Memorandum (SDDM), dated 16 January 1981, Subject: "JTIDS Milestone II Approval (Class 2 Terminal FSED)"; Decision Coordinating Paper (DCP), dated 31 March 1981.

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

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 15, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (MAR 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY81\$)	1493.6	1672.4	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Procurement			
(1) Cost (BY81\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

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13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	382.5	0.0	0.0	382.5
Previous Changes:				
Economic	-31.5	-	-	-31.5
Quantity	+774.0	-	-	+774.0
Schedule	+22.8	-	-	+22.8
Engineering	+352.7	-	-	+352.7
Estimating	+590.9	-	-	+590.9
Other	-	-	-	-
Support	+56.1	-	-	+56.1
Subtotal	+1765.0	-	-	+1765.0
Current Changes:				
Economic	-9.4	-	-	-9.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-48.3	-	-	-48.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-57.7	-	-	-57.7
Total Changes	+1707.3	-	-	+1707.3
Current Estimate	2089.8	-	-	2089.8

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

a. (U) Summary (FY 1981 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	309.0	0.0	0.0	309.0
Previous Changes:				
Quantity	+528.1	-	-	+528.1
Schedule	-1.5	-	-	-1.5
Engineering	+243.8	-	-	+243.8
Estimating	+402.4	-	-	+402.4
Other	-	-	-	-
Support	+38.6	-	-	+38.6
Subtotal	+1211.4	-	-	+1211.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-26.8	-	-	-26.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-26.8	-	-	-26.8
Total Changes	+1184.6	-	-	+1184.6
Current Estimate	1493.6	-	-	1493.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates. In 1993, USAF Economic Adjustment for Negative Program Change increased escalation.

Quantity: Air Force quantity increases from 15 to 64 development terminals through 1990 to accommodate new platform testing and integration requirements; Army increase from 5 to 51 development terminals through 1988 for testing and integration; Addition of 26 Navy development terminals to joint program in 1987 with an increase from 26 to 32 terminals in 1990 for new platform integration testing; Addition of 27 OSD funded terminals in 1988.

JTIDS, December 31, 1995

11b. (U) Cost Variance Analysis (Cont'd):

Addition of 40 development units in 1994 to support Ballistic Missile Defense Organization (BMDO) THAAD and CORPS SAM programs.

Schedule: Increase due to 6 month schedule slip of RDT&E; deletion of Army FY85 test support funds.

Engineering: Increased scope of Software Support Facility, Contractor Software Support, F-15 Avionics Intermediate Shop, sustaining F-16 planning effort, F-15 IOT&E, Class 2 Logistics, F-15 Group A; decreased scope of F-16 and Bilingual Interface; added development of Class 2 terminal High Power Amplifier and interfaces for upgrade in E-3 and MCE platforms to TADIL-J capability; F-15 PSE added to program; addition of Army budget for DT/OT IIA testing. MIDS FSD added to program.

Estimating: Yearly adjustments for current and prior year escalation.

Revised estimates through 1988 for Class 1 work removal; undistributed budget cuts (FY87, FY89); adjustments to correct errors in 31 Dec 83, 31 Dec 84, and 31 Dec 85 SARs; Gramm-Rudman cuts; reinstatement of Army funds managed at OSD; FY 90-94 USAF and Navy estimate increased for follow-on development, testing, and program support and MIDS development and support (USAF); Navy reductions for program restructuring; and increases for platform integration costs not included in early estimates.

In 1989, reduction of FY 90-94 AF and OSD funding; MIDS transferred to Navy.

In 1990, increased estimate for preplanned product improvements; Navy program restructuring impacted FY 87-95; reduction in JTIDS supportability, logistics, interoperability and product improvement due to funding constraints; and additional data link development in FY 95-97.

In 1991, ABCCC integration efforts added; increased Navy estimate for integration in FY 91-94 due to restructuring from fiscal constraints; reduced USAF Preplanned Product Improvements (P3I) effort in FY 91-97 due to fiscal constraints; increased OSD estimate due to revised data link development costs.

JTIDS, December 31, 1995

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

In 1992, increases from extension of the FYDP (FY98-99), adjustments for actuals; Navy increases for fiscal years not previously reported (FY 95-97); USAF increases (FY 76-80) for previously unreported fiscal year budgets resulting from Program Office Budget Review. OSD reductions resulted from Congressional adjustments.

In 1993, negative adjustment for current and prior year inflation; USAF reductions in Pre-Planned Product Improvements and Interim Software Support Activity at Warner-Robins Air Logistics Center due to Budget Reductions; Navy reductions due to program restructuring from Budget Actions; OSD reductions in Class 2M development support due to Budget Reductions.

In 1994, increase due to transfer of Army Data Distribution System (ADDS) JTIDS RDT&E Acquisition Program Baseline (APB) funding to JTIDS APB and SAR; negative adjustment for current and prior year inflation; increase due to USAF and OSD extension of the FYDP; USAF net decreases FY94-99 due to Budget Decisions; increase due to Navy additions for Pre-Planned Product Improvements.

Support: Increased to develop, demonstrate, and evaluate direct link between E-3A and HIMAD elements using Class 2 terminals.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) RDT&E		
Revised Escalation Indices. (Economic)		-9.0
Economic adjustment for negative program content changes in Army and Navy programs (Economic)	N/A	-0.4
Realignment of Navy RDT&E JTIDS funds in FY97-FY01 to the Multifunctional Information Distribution System (MIDS) RDT&E program (Estimating)	-21.8	-39.4
Adjustment for Current and Prior Year Inflation (Estimating)	+1.9	+2.7

JTIDS, December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
OSD, Army and USAF FY94-FY00 decreases due to Budget Decisions, resulting in elimination of generic integration studies and decreased interoperability and engineering support efforts (Estimating)	-7.9	-13.4
USAF FY97 additional development and test efforts for the Enhanced Position Location Reporting System (EPLRS) (Estimating)	+1.0	+1.8
RDT&E Subtotal	<u>-26.8</u>	<u>-57.7</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not Applicable.

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

a. (U) RDT&E --	Initial Contract Price		
(U) <u>DEVELOPMENT:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GEC-MARCONI, TOTOWA, NJ			
F19628-86-C-0035, FFP	\$23.7	N/A	6
Award: December 31, 1985			
Definitized: December 31, 1985			
Current Contract Price			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$492.5	N/A	117
Estimated Price At Completion			
	<u>Contractor</u>	<u>Program Manager</u>	
	\$492.5	\$492.5	
	<u>Cost Variance</u>		<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0		\$0.0
Cumulative Variances To Date	<u>\$0.0</u>		<u>\$0.0</u>
Net Change	\$0.0		\$0.0

Explanation of Change:

This is a joint Air Force/Army/Navy/Marine Corps contract with Air Force as Lead Service. Changes in Target Price since last report (\$16.2M Increase). Pre-Operational Support and Post-Product Improvement Plan testing \$10.8M; Class 2M Spares Buy \$4.9M; Receiver Synthesizer effort \$0.5M. There is no impact to the contract or the program.

JTIDS, December 31, 1995

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

a. (U) Program Status --

- (1) Percent Program Completed: 80.8% (21 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 95.5% (\$1995.4 / \$2089.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY76-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	1959.9	35.5	33.8	60.6	2089.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1959.9	35.5	33.8	60.6	2089.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1976				0.1	0.1	0.1	0.1	6.6
1977								
1977				1.4	1.0	1.0	1.0	2.9
1978				1.0	0.8	0.8	0.8	2.6
1979				7.5	6.4	6.4	6.4	6.8
1980				4.6	4.3	4.3	4.3	9.4

JTIDS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1981				2.8	2.9	2.9	2.9	11.9
1982				10.9	12.2	12.2	12.2	9.2
1983				17.0	19.9	19.9	19.9	4.9
1984				17.6	21.3	21.3	21.3	3.8
1985				18.1	22.7	22.7	22.7	3.4
1986				10.8	13.9	13.9	13.9	2.8
1987				3.4	4.6	4.6	4.6	2.7
1988				5.9	8.1	8.1	8.1	3.0
1989				6.2	9.0	9.0	9.0	4.2
1990				7.9	11.8	11.8	11.8	4.0
1991				8.1	12.5	12.5	12.5	4.3
1992				8.4	13.4	13.4	13.0	2.8
1993				3.1	5.1	5.1	4.9	2.7
1994				3.0	4.9	4.9	3.9	2.0
1995				2.3	3.8	3.8	2.6	1.9
1996				0.7	1.2	0.2		2.0
Subtot				140.8	179.9	178.9	175.9	
Army				140.8	179.9	178.9	175.9	

JTIDS, December 31, 1995

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

Obligations and expenditures reflect Army Program Office records as of 29 February 1996.

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

1987				27.6	37.1	37.1	37.1	2.7
1988				75.1	103.5	103.5	103.5	3.0
1989				78.5	113.5	113.5	113.5	4.2
1990				57.6	85.8	85.8	85.8	4.0
1991				47.5	73.5	73.5	73.5	4.3
1992				38.9	61.9	61.9	60.9	2.8
1993				25.1	40.8	40.8	38.5	2.7
1994				6.8	11.2	11.2	10.8	2.0
1995				3.1	5.3	5.0	3.7	1.9
1996				5.4	9.3	6.7	0.6	2.0
1997				3.5	6.1			2.2
1998				0.3	0.5			2.3
Subtot				369.4	548.5	539.0	527.9	
Navy				369.4	548.5	539.0	527.9	

Obligations and expenditures reflect Navy Program Office records as of 29 February 1996.

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

1976				12.0	8.2	8.2	8.2	6.6
197T								
1977				6.9	5.0	5.0	5.0	2.9

JTIDS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1978				14.9	11.7	11.7	11.7	2.6
1979				7.9	6.7	6.7	6.7	6.8
1980				19.8	18.7	18.7	18.7	9.4
1981				18.8	19.6	19.6	19.6	11.9
1982				35.1	39.2	39.2	39.2	9.2
1983				29.6	34.6	34.6	34.6	4.9
1984				20.4	24.7	24.7	24.7	3.8
1985				48.8	61.2	61.2	61.2	3.4
1986								2.8
1987								2.7
1988				15.9	21.9	21.9	21.9	3.0
1989				33.7	48.7	48.7	48.7	4.2
1990				24.2	36.1	36.1	36.1	4.0
1991				24.0	37.1	37.1	34.5	4.3
1992				9.7	15.4	15.4	15.0	2.8
1993				9.3	15.1	15.1	13.3	2.7
1994				7.9	13.1	13.1	12.2	2.0
1995				6.5	11.0	10.8	7.3	1.9

JTIDS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Recl Rate (t)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1996				5.3	9.2	2.3	0.9	2.0
1997				6.3	11.1			2.2
1998				5.2	9.4			2.3
1999				5.2	9.5			2.2
2000				5.3	9.9			2.2
2001				5.3	10.2			2.2
Subtot				378.0	487.3	430.1	419.5	
USAF				378.0	487.3	430.1	419.5	

Obligations and expenditures reflect JTIDS Program Office records as of 29 February 1996.

Appropriation: 0400 EDT&E, Defense Agencies

1986				154.4	198.3	198.3	198.3	2.8
1987				109.5	147.0	147.0	147.0	2.7
1988				57.0	78.6	78.6	78.6	3.0
1989				41.5	60.0	60.0	60.0	4.2
1990				46.4	69.2	69.2	68.8	4.0
1991				42.8	66.2	66.2	59.3	4.3

JTIDS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY81 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1992				55.8	88.8	88.8	81.2	2.8
1993				24.7	40.1	40.1	34.2	2.7
1994				24.5	40.5	40.5	29.5	2.0
1995				18.9	31.9	31.5	16.8	1.9
1996				9.2	15.8	7.9	0.5	2.0
1997				9.4	16.6			2.2
1998				2.6	4.7			2.3
1999				3.1	5.7			2.2
2000				3.2	6.1			2.2
2001				2.4	4.6			2.2
Subtot				605.4	874.1	828.1	774.2	
DoD				605.4	874.1	828.1	774.2	
Grand Total				1493.6	2089.8	1976.1	1897.5	

Obligations and expenditures reflect JTIDS Program Office records as of 29 February 1996.

JTIDS, December 31, 1995

17. (U) Production Rate Data:

- a. (U) Deliveries to Date --
- | | <u>Plan/Actual</u> |
|-------------|--------------------|
| RD&E | 214/174 |
| Procurement | 0/0 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The Class 2/2H and Class 2M Terminal Cost Analysis Requirements Descriptions (CARDS), 11 Jan 95, serve as the technical baseline for this estimate. The costs reported in this section are the costs to operate, maintain, and sustain the JTIDS Class 2/2H and 2M terminals. Costs are based on 464 Class 2/2H and 293 Class 2M terminals installed in 19 platforms: F-15, Air Intelligence Agency (AIA, RC-135), Airborne Command and Control Center, Mobile Operations Center, E-3A (AWACS), E-8 (JSTARS), Marine TACM and ATACC, Navy Ships, Submarines, F-14 and E-2C aircraft, Army FAAD, Patriot, JTAGS, THAAD, ATMDTOC, and CORPS SAM. The mission personnel costs includes the cost of pay and allowances for personnel directly assigned to operate and maintain the terminals. Unit level consumption includes the cost of operations, maintenance and support materials consumed at the unit level. This includes replenishment and disposal of battery cells, exchange costs for depot level reparable, and recurring training costs for operators and maintainers. Contractor support includes the costs to repair terminals at a contractor's facility. This category is for both interim contract and contractor logistics support. Sustaining support includes support equipment replacement, depot level sustaining engineering/program management support, and software maintenance activities. Indirect support includes civilian and military labor, material and overhead costs specialty training and base support of JTIDS.

JTIDS, December 31, 1995

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

b. (U) Costs -- (FY 1981 Constant (Base-Year) Dollars in Millions)

Cost Element	JTIDS Average Steady State Cost	JTIDS Average Steady State Cost (Antecedent)
Personnel	0.0	N/A
Unit Level Consumption	24.5	N/A
Sustaining Support	9.2	N/A
Contractor Support	0.3	N/A
Indirect Support	1.5	N/A
Total	35.5	N/A

In the 1994 SAR, the Operating and Support Costs (O&S) Assumptions and Ground Rules indicated that O&S costs included the Class 2M terminals. However, the 1994 SAR inadvertently excluded O&S costs for the 2M terminal. The O&S costs for the Class 2/2H/2M terminals are included in the 1995 SAR.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	2.9	1.9	0.6	11.8	17.2
Industrial Fund	---	---	---	---	---
Total	2.9	1.9	0.6	11.8	17.2

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

PROGRAM: TRIDENT II SUBMARINE

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):

OHIO Class Submarine

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

STRATEGIC SYSTEMS PROGRAMS
DEPARTMENT OF THE NAVY
WASHINGTON, DC 20376-5002

RADM GEORGE P. NANOS
Assigned: June 30, 1994
AV 327-0456 COMM (703) 607-0453

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

RDT&E:

PE 0604363N Project J1546
PE 0606371N Project J1546

PROCUREMENT:

APPN 1611 ICN 01 01 1040 (Navy)

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TRIDENT II SUBMARINE, December 31, 1995

5. (U) Related Programs:

TRIDENT I Backfit and TRIDENT II (D-5) Missile, TRIDENT I Systems, SSN 21 (SEAWOLF), SSN 688 Class Program and New Attack Submarine (NSSN).

6. (U) Mission and Description:

To provide an undersea strategic missile system to insure that the U.S. continues to maintain a credible, survivable deterrent independent of foreseeable threats. The nuclear-powered OHIO Class D-5 Capable Submarine has 24 missile tubes. Incorporation of state-of-the-art technologies in submarine quietness, mobility, and self-defense make the submarine highly survivable. The submarine can patrol, transit, or evade enemy search forces at higher speeds than previous SSBNs. It has an integrated radio room designed to enhance the survivability of communication links in a hostile electromagnetic environment, and carries the latest submarine defense systems.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Deputy Secretary of Defense's Program Decision Memorandum (PDM) of October 2, 1981 directed the Navy to fund development of the TRIDENT II (D-5) missile with a December 1989 IOC. The design characteristics of the TRIDENT II (D-5) missile required modifications to the OHIO Class Submarine. Efforts in FY 1982 included identification of the necessary subsystem changes to incorporate the TRIDENT II (D-5) missile in the OHIO Class Submarine baseline. Required weapon support system and component developments were initiated.

On April 29, 1982, SECNAV maintained the December 1989 IOC for TRIDENT II (D-5), while rephrasing the introduction of the weapon system into the fleet. A decision was made to incorporate the D-5 Strategic Weapon System (SWS) starting with the ninth submarine (SSBN 734). The D-5 capability would be accomplished during initial construction of the ship, consequently the ninth ship delivery was extended one year. The schedules of the tenth (SSBN 735) and the eleventh (SSBN 736) were also extended. The twelfth (SSBN 737) and the subsequent ship construction periods were not affected by the change to TRIDENT II (D-5). On June 1, 1982 the SECDEF advised Congress of the decision to accelerate the rate of introduction of D-5 while maintaining the 1989 IOC.

In November 1982, the Navy executed modifications to the Electric Boat contract which incorporated the D-5 SWS into the SSBN 734 and SSBN 735 and revised their delivery dates to December 1988 and August 1989 respectively. On November 21, 1983 an option to acquire the SSBN 736 was exercised. A contemporaneous modification to incorporate D-5 and extend delivery to April 1990 was also executed. The contract for the SSBN 737 was awarded in August 1985. In

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7a. (U) Program Highlights (Cont'd):

March 1986 an option for the SSBN 738 was awarded. In May 1987 the SSBN 739 was awarded to Electric Boat. In January 1988 the SSBN 740 was competitively awarded to Electric Boat. In October 1988 an option for the SSBN 741 was awarded. In October 1989 an option for the SSBN 742 was awarded. In December 1990 the SSBN 743 (the eighteenth and final SSBN TRIDENT OHIO Class Submarine) was awarded to Electric Boat.

The SSBN 734 delivered in November 1988 and deployed in March 1990. The SSBNs 735 and 736 deployed in October 1990 and in September 1991 respectively. The SSBN 737 was delivered in June 1991 and deployed in June 1992. The SSBN 738 was delivered in June 1992 and deployed in June 1993. The SSBN 739 delivered in June 1993 and deployed in June 1994. The SSBN 740 was delivered in June 1994. The SSBN 741's Ceremonial Launch was conducted in July 1994. Target Delivery Dates were accelerated for SSBNs 742 and 743 from 31 August 1996-1997 to 21 June 1996, and 20 June 1997 respectively, although the Contract Delivery Dates remain the same.

b. (U) Significant Developments Since Last Report --

The USS RHODE ISLAND (SSBN 740) conducted its Post Shakedown Availability (PSA) from February to April 1995 and deployed for its first deterrent Patrol in July 1995. The USS WYOMING (SSBN 742) "Floated Off" in May 1995 and the Ceremonial Launch was conducted in July 1995. The USS MAINE (SSBN 741) was delivered on June 21, 1995 commissioned on July 29, 1995 and completed its Demonstration and Shakedown Operations in December 1995. Electric Boat Division is still projecting accelerated Target Delivery Dates for the two remaining TRIDENTs: USS WYOMING (SSBN 742) and USS LOUISIANA (SSBN 743) from August 31, 1996-1997 to June 21, 1996 and June 20, 1997, respectively.

The Ohio Class D-5 Capable Submarine is expected to satisfy mission requirements.

This is the final SAR based on 90% expenditures.

c. (U) Changes Since As Of Date --

The USS WYOMING Initial Criticality was achieved in January 1996 and will begin Sea Trials in mid-April 1996. The USS MAINE will commence its PSA in late February 1996 and will deploy for its first deterrent patrol during the summer of 1996.

8. (U) Threshold Breaches:

There are no threshold breaches to the Acquisition Program Baseline of December 31, 1988 and no Nunn-McCurdy unit cost breaches.

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9. (U) Schedule:

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Complete Baseline Design	MAR 72	MAR 72	MAR 72
Characteristics Approved	JAN 73	JAN 73	JAN 73
Complete Ship Contract Design	AUG 84	AUG 84	AUG 84
Production Contract Award	JAN 82	JAN 82	JAN 82
Construction Started:			
First Ship	JAN 82	JAN 82	JAN 82
Last Ship	JAN 88	JUN 92	DEC 90
Delivery:			
First Ship	DEC 88	DEC 88	NOV 88
Last Ship	DEC 93	APR 98	JUN 97
System IOC	DEC 89	DEC 89	MAR 90
Launch:			
First Ship	NOV 86	N/A	DEC 86
Last Ship	JUL 92	N/A	JUL 96
Acceptance Trials:			
First Ship	DEC 88	N/A	NOV 88
Last Ship	DEC 93	N/A	JUN 97

b. (U) Previous Change Explanations --

The start of construction, launch, acceptance trials, and delivery for the last ship was revised to reflect an increased number of submarines for the total program. Production Estimate included a total program of seven submarines.

The acceptance trials and delivery of the first ship was revised to reflect the completion of those milestones.

The system IOC was revised to reflect delays in the TRIDENT II (D-5) Missile.

The start of construction, launch, acceptance trials, and delivery for the last ship were revised in the December 31, 1990 SAR to reflect a total program of ten submarines vice thirteen in the December 31, 1989 SAR.

Electric Boat decided to accelerate the Target Delivery Dates for the four remaining TRIDENT hulls: from July 1, 1994 to June 24, 1994 for SSBN 740 and from August 31, 1995-1997 for SSBNs 741-743 to June 23, 1995, June 21, 1996, and June 20, 1997 respectively.

c. (U) Current Change Explanations -- None.

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TRIDENT II SUBMARINE, December 31, 1995

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

d. (U) References --

(U) Production Estimate:

USD (R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated December 31, 1988.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program</u>		<u>Demonstrated</u>	<u>Current</u>
		<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>
Length Overall (ft)	558	560	/ 560	560	560
Beam Max. (hull dia. in feet)	42	42	/ 42	42	42
Draft Navigation-ft	35.5	36.5	/ 36.5	36.5	36.5
Submerged Displacement	18500	18700	/ 18700	18700	18700

(b)(1)



b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

USD (R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated December 31, 1988.

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TRIDENT II SUBMARINE, December 31, 1995

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

	Production	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	49.3	62.1	65.4
Procurement	9980.0	14471.5	11907.9
Sailaway	(9743.3)		(11738.8)
Other Weapon System	(236.7)		(169.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	519.6	424.6	424.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 83 Base-Year \$	10548.9	14958.2	12397.3
Escalation	3536.3	2925.1	1848.0
Development (RDT&E)	(3.6)	(4.6)	(5.5)
Procurement	(3416.8)	(2845.9)	(1767.3)
Construction (MILCON)	(115.9)	(74.6)	(75.2)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	14085.2	17883.3	14245.3

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>7</u>	<u>13</u>	<u>10</u>
Total	7	13	10

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs --

The Current Estimate for Procurement includes \$1,410.3 (Then Year \$ in millions) for Nuclear Propulsion costs.

e. (U) References --

(U) Production Estimate:

USD(R&E) Memo of July 22, 1981, subject OHIO Class Submarine Program.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated December 31, 1988.

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TRIDENT II SUBMARINE, December 31, 1995

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 88 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY83\$)	12397.3	14958.2	
(2) Quantity	10	13	
(3) Unit Cost	1239.73	1150.63	7.74
b. (U) Procurement			
(1) Cost (BY83\$)	11907.9	14471.5	
(2) Quantity	10	13	
(3) Unit Cost	1190.79	1113.19	6.97

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TRIDENT II SUBMARINE, December 31, 1995

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	52.9	13396.8	635.5	14085.2
Previous Changes:				
Economic	-3.4	-2799.6	-40.7	-2843.7
Quantity	-	+6288.6	-	+6288.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+22.2	-3054.6	-95.6	-3128.0
Other	-	-	-	-
Support	-	-142.8	-	-142.8
Subtotal	+18.8	+291.6	-136.3	+174.1
Current Changes:				
Economic	-0.9	14.7	-	+13.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.1	-30.7	-	-30.6
Other	-	-	-	-
Support	-	2.8	-	+2.8
Subtotal	-0.8	-13.2	-	-14.0
Total Changes	+18.0	+278.4	-136.3	+160.1
Current Estimate	70.9	- 13675.2	499.2	14245.3

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TRIDENT II SUBMARINE, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	49.3	9980.0	519.6	10548.9
Previous Changes:				
Quantity	-	+4367.2	-	+4367.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+16.0	-2354.1	-95.6	-2433.7
Other	-	-	-	-
Support	-	-70.6	-	-70.6
Subtotal	+16.0	+1942.5	-95.6	+1862.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.1	-17.6	-	-17.5
Other	-	-	-	-
Support	-	3.0	-	+3.0
Subtotal	+0.1	-14.6	-	-14.5
Total Changes	+16.1	+1927.9	-95.6	+1848.4
Current Estimate	65.4	11907.9	424.0	12397.3

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
 Estimating: Transfer of certain efforts properly identified with D-5 capable SSBNs from the TRIDENT I program, reallocation of funds to TRIDENT II (D-5) Missile and increased estimates for completion of development efforts. Adjustment for current and prior year inflation. Revised estimates based on latest contract experience.

Procurement

Economic: Revised economic escalation indices. Adjustment for negative program changes.

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TRIDENT II SUBMARINE, December 31, 1995

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

Quantity: Six additional submarines through December 1989 SAR. Deletion of three submarines in December 1990 SAR.

Estimating: Revised estimates for shipbuilding and GFE costs, estimating changes applicable to deletion of three SSBNs from the program, and correction to sailaway costs in prior SARs. Adjustment for current and prior year escalation. Revised estimates based on latest contract experience.

Support: Correction to reconcile sailaway and support costs in prior SARs. Adjustment for current and prior year escalation. Revised estimates.

MILCON

Economic: Revised escalation indices.

Estimating: Revised construction estimates for Kings Bay.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+0.8
Latest contract experience. (Estimating)	-0.7	-0.7
RDT&E Subtotal	<u>+0.1</u>	<u>-0.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+6.7
Economic adjustment for negative program change. (Economic)	N/A	+8.0
Adjustment for Current and Prior Inflation. (Estimating)	-5.9	-10.0
Revised estimates based on latest contract experience. (Estimating)	-11.7	-20.7
Adjustment for Current and Prior Inflation. (Support)	+0.5	+0.6
Revised Estimates (Support)	+2.5	+2.2
Procurement Subtotal	<u>-14.6</u>	<u>-13.2</u>

TRIDENT II SUBMARINE, December 31, 1995

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2012.2	-283.0	25.2	--	--	-315.9	--	-14.0	-587.7	1424.5

For the OHIO Class D-5 Capable Submarine Program, the initial SAR estimate is the Current Baseline Estimate.

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

a. (U) Procurement --

(U) <u>SUBMARINE GROUP VII SHIP:</u> GENERAL DYNAMICS, GROTON, CT N00024-88-C-2000, FPIF Award: January 5, 1988 Definitized: January 5, 1988	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$1837.9	\$2077.6	3

	Current Contract Price		<u>Qty</u>	Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>		<u>Contractor</u>	<u>Program Manager</u>
	\$1908.7	\$2158.3	3	\$1889.8	\$1922.4
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$38.9	\$21.8
Cumulative Variances To Date (09/30/95)				\$63.8	\$-1.2
Net Change				\$24.9	\$-23.0

Explanation of Change:

The net cost and schedule variances are not significant. The Program Manager's estimate at completion remains within the Program Manager's budget.

General Dynamics, Electric Boat Division, previously accelerated the Target Delivery Dates for all three SSBNs in Group VII from August 1994-1996 to late June in their respective years. Electric Boat delivered the first ship of this contract (SSBN 740) on June 24, 1994 and the second ship (SSBN 741) on June 21, 1995. The current Contract Delivery Date for SSBN 742 remains unchanged.

TRIDENT II SUBMARINE, December 31, 1995

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

(U) SUBMARINE (NUCLEAR):
 WESTINGHOUSE ELECTRIC CO., SCHENECTADY, NY
 NOO024-85-C-4011, CPFF
 Award: December 3, 1984
 Definitized: December 3, 1984

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$197.5	N/A	0	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$186.0	N/A	0	\$186.0	\$186.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/95)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

Under Naval Nuclear Program prime contracts about 90 percent of the contract value is subcontracted in fixed price type subcontracts. Because control of prime contract cost and measurement of planned vs. actual cost is exercised through detailed government and prime contractor surveillance of subcontract obligations, the Navy has waived contract cost and schedule control system criteria requirements for Naval Nuclear Propulsion Program procurements. If excess funds are determined to be available, they are returned to the program for further use. Program Manager's estimate at completion remains within approved budget.

(U) NUCLEAR PROPULSION:
 DEPT OF ENERGY, GERMANTOWN, MD
 NOO024-67-F-5110, EAO
 Award: July 1, 1977
 Definitized: July 1, 1977

			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
	\$442.7	N/A	0	

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$589.9	N/A	0	\$589.9	\$589.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (12/31/95)	\$	\$
Net Change	\$0.0	\$0.0

Explanation of Change:

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15. (U) Contract Information (Cont'd):
See previous Explanation of Change.

(U) <u>SUBMARINE GROUP VIII SMP:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Dynamics, Groton, CT N00024-91-C-2120, PPIP Award: December 19, 1990 Definitized: December 19, 1990	\$765.0	\$876.0	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$773.6	\$885.9	1	\$744.7	\$760.7

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-0.6	\$-5.1
Cumulative Variances To Date (09/30/95)	<u>\$-16.8</u>	<u>\$-8.8</u>
Net Change	\$-16.2	\$-3.7

Explanation of Change:

The net cost and schedule variances are not significant.

General Dynamics Electric Boat Division previously accelerated the Target Delivery Date for SSBN 743 from August 31, 1997 to June 20, 1997. The current Contract Delivery Date remains unchanged.

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

a. (U) Program Status --

- (1) Percent Program Completed: 88.9% (16 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 99.9% (\$14229.4 / \$14245.3)

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TRIDENT II SUBMARINE, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY81-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98)	<u>Total</u>
RDT&E	69.0	0.9	1.0	-	70.9
Procurement	13650.2	10.1	8.0	6.9	13675.2
MILCON	499.2	-	-	-	499.2
O&M	-	-	-	-	-
Total	14218.4	11.0	9.0	6.9	14245.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Excl Rate (a)
		FY83 Dollars Nonrec	Rec		Program	Obligated	Ex-pended	

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

1982				25.2	24.6	24.6	24.6	7.6
1983								4.9
1984				9.0	9.5	9.5	9.5	3.8
1985				8.6	9.4	9.4	8.9	3.4
1986				7.8	8.8	8.8	8.6	2.8
1987				5.0	5.8	5.8	5.4	2.7
1988				5.0	6.0	6.0	6.0	3.0
1989				0.6	0.8	0.8	0.8	4.2
1990				0.6	0.8	0.8	0.8	4.0

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

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY83 Dollars			Program	Obli- gated	Ex- pended	
		Nonrec	Rec					

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1991				0.4	0.5	0.5	0.5	4.3
1992				0.7	1.0	1.0	1.0	2.8
1993				0.6	0.9	0.9	0.9	2.7
1994				0.1	0.2	0.2	0.2	2.0
1995				0.5	0.7	0.7	0.1	1.9
1996				0.6	0.9			2.0
1997				0.7	1.0			2.2
Subtot				65.4	70.9	69.0	67.3	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1981	1		1358.9	1434.9	1463.6	1430.0	1375.3	9.6
1982				317.4	333.5	333.5	332.6	7.5
1983	1		1351.3	1170.1	1249.4	1234.9	1204.6	3.8
1984	1		1224.7	1438.6	1566.4	1565.2	1487.7	3.6
1985	1		1193.5	1173.5	1303.3	1303.3	1286.3	2.1
1986	1		1123.4	1036.2	1177.6	1176.2	1148.2	1.4
1987	1		1143.2	1115.3	1296.1	1294.9	1258.0	1.5
1988	1		1116.7	1113.3	1332.0	1324.9	1284.8	2.6

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (4)
		Nonrec	Rec		Program	Obli- gated	Ex- pende	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1989	1		1080.6	1079.3	1330.2	1304.5	1220.6	3.3
1990	1		1066.0	943.4	1196.7	1113.6	965.5	1.1
1991	1		1080.5	988.4	1291.3	1189.6	765.9	1.6
1992				59.4	79.9	79.7	71.5	2.5
1993				8.1	11.1	10.9	10.5	3.2
1994				8.7	12.3	9.8	7.0	4.2
1995				4.7	6.8	4.5	3.3	3.8
1996				6.8	10.1	1.3		2.0
1997				5.3	8.0			2.2
1998				4.5	6.9			2.2
Subtot	10		11738.8	11907.9	13675.2	13376.8	12421.8	

Appropriation: 1205 Military Construction, Navy

1982				12.8	13.0	13.0	13.0	7.6
1983				14.0	14.8	14.8	14.8	4.9
1984				15.6	17.0	17.0	17.0	3.8
1985				85.6	96.1	96.1	96.1	3.4
1986				79.4	91.8	91.8	91.8	2.8

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TRIDENT II SUBMARINE, December 31, 1995

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

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY83 Dollars			Program	Obli- gated	Ex- pended	
		Nonrec	Rec					

Appropriation: 1205 Military Construction, Navy (Cont'd)

1987				109.7	131.1	131.1	131.1	2.7
1988				59.6	73.8	73.8	70.4	3.0
1989				28.5	36.7	32.5	28.0	4.2
1990				18.8	24.9	19.1	19.1	4.0
Subtot				424.0	499.2	489.2	481.3	
Grand Total	10		11738.8	12397.3	14245.3	13935.0	12970.4	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	0/0
Procurement	8/8

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Repair cost element includes maintenance material cost and civilian and military salaries at the TRIDENT Refit Facilities for one TRIDENT hull. Manpower cost element includes cost for two submarine crews. Each crew contains 15 Officers and 148 Enlisted personnel. The source of the costs displayed is the Program Manager's estimate.

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TRIDENT II SUBMARINE, December 31, 1995

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

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

Cost Element	Avg Annual Cost Per Submarine	Avg Annual Cost Per Submarine
Repair	9.4	N/A
OPTAR	0.9	N/A
Manpower	7.9	N/A
Total	18.2	N/A

Costs are based on Program Manager's Estimate.

c. (U) Contractor Support Costs -- None.

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

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred 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 GEORGE P. NANOS
DEPARTMENT OF THE NAVY Assigned: June 30, 1994
WASHINGTON, DC 20376-5002 AV 327-0456 COMM (703) 607-0453

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

RDT&E:
PE 0603371N Project J0951
PE 0604363N Project J0951
PROCUREMENT:
APPN 1507 ICN 1150 (Navy)

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TRIDENT II MISSILE, December 31, 1995

5. (U) Related Programs:

TRIDENT Submarine System, TRIDENT I (C-4) Missile Systems, Fleet Ballistic Missile System, and DOE Re-Entry Vehicle Development.

6. (U) Mission and Description:

The TRIDENT II (D-5) Strategic Weapons System program developed an improved Sea Launched Ballistic Missile (SLBM) with greater accuracy and payload capability at equivalent ranges as compared to the TRIDENT I (C-4) system. TRIDENT II enhances U.S. strategic deterrence by providing a survivable sea-based system capable of engaging the full spectrum of potential targets. It enhances the U.S. position in strategic arms negotiation by providing a weapon system with performance and payload flexibility that accommodates various treaty initiatives. TRIDENT II's increased payload allows the deterrent mission to be achieved with fewer submarines.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In March 1980 the Secretary of Defense described to Congress a Sea Launched Ballistic Missile Modernization Advanced Development Program leading to an end of FY 1983 Defense System Acquisition Review Council Milestone II decision to select a weapon system option which would achieve specific performance objectives with an IOC of CY 1989. The Secretary of Defense reaffirmed the need for an improved Sea Launched Ballistic Missile in his Decision Memorandum of 2 February 1981. The Deputy Secretary of Defense in his Program Decision Memorandum of 2 October 1981, directed the Navy to fund the development of a new higher yield Re-Entry Body for the TRIDENT II (D-5) Missile. The Deputy Secretary of Defense in his memorandum of 28 October 1983, 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. All major D-5 weapon system subsystem completion development contracts were awarded as of March 1984. The flight testing from the flat pad at Cape Canaveral was completed in January 1989. Fifteen flight tests were fully successful, one flight (the seventh) was a partial success, two flights (the ninth and the thirteenth) failed to meet test objectives, and one flight (the fifteenth) was terminated by the range safety officer and is a "no test." The first TRIDENT II (D-5) Performance Evaluation Missile (PEM) was launched from the SSBN 734 (USS TENNESSEE) on 21 March 1989. The missile experienced loss of control just after first stage (F/S) ignition and was subsequently auto-destructed by the onboard flight termination system (FTS).

The second PEM launched on 2 August 1989 was fully successful. The third PEM was launched on 15 August 1989 and experienced a control loss early in first stage flight, though all hardware that had been modified as a result of the first failure performed satisfactorily.

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7a. (U) Program Highlights (Cont'd):

PEM flight tests resumed in December 1989; six fully successful tests were conducted and the PEM flight test program completed in February 1990.

Effective with the FY 1994 President's Budget, annual missile quantities were reduced from 48 to 24 per year, flight test program requirements were significantly reduced, and the missile procurement objective was reduced to 428 for the outload of ten TRIDENT II submarines vice 779 for eighteen submarines.

The FY 1995 President's Budget further reduced annual missile quantities from 24 per year in FY 1995 and subsequent years to 18 in FY 1995 and 12 per year thereafter. The Navy began looking at ways to preserve the industrial base in a cost-effective manner. Based on revision of several program planning factors, the missile procurement objective was reduced to 389 from 428 for the outload of ten TRIDENT II submarines.

Based on the outcome of the Department of Defense's Nuclear Posture Review the FY 1996 President's budget reflected a TRIDENT II force structure of 14 vice 10 SSBNs. Four Trident I (C-4) configured submarines will be backfit to the TRIDENT II (D-5) configuration beginning in FY 2000. The inventory objective was increased to 434 missiles reflecting the increase in the number of submarines as well as a further reduction in the annual D-5 testing rate from 6 to 4.

The acquisition strategy adopted for the FY 1996 President's budget was based on low rate production augmented by critical component production continuity quantities as required to ensure quality, reliability and safety. This approach minimizes annual funding requirements and minimizes the program risk associated with supplier base instability.

The following TRIDENT II (D-5) submarines have completed strategic loadout and have deployed: 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 and the SSBN 739 in May 1994.

b. (U) Significant Developments Since Last Report --

The Under Secretary of Defense (Acquisition and Technology) has modified the plan established last year which transitioned the TRIDENT II (D-5) missile program to affordable low rate production. The modified plan reduces the annual procurement of D-5 critical components. This change reduces near term funding requirements but accepts increased risk of supplier-base erosion associated with attempting to achieve affordable production at unprecedented low annual rates.

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TRIDENT II MISSILE, December 31, 1995

7b. (U) Program Highlights (Cont'd):

The USS RHODE ISLAND (SSBN 740) completed strategic loadout and deployed on June 19, 1995. The USS MAINE (SSBN 741) successfully completed two Demonstration and Shakedown Operations (DASO) in September and December of 1995 respectively.

This system will satisfy its mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no threshold breaches to the Acquisition Program Baseline of May 25, 1995 and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone I (Initiate Concept Definition)	OCT 77	OCT 77	OCT 77
Commence Advanced Dev Phase	OCT 80	OCT 80	OCT 80
Milestone II (Commence FSD)	OCT 83	OCT 83	OCT 83
First Development Flight Test	JAN 87	JAN 87	JAN 87
Milestone III (Production Approval)/ Award Initial Missile Production Contract	APR 87	APR 87	APR 87
IOC (may be less than full msl outload)	DEC 89	DEC 89	MAR 90

b. (U) Previous Change Explanations --

The initial missile production contract was awarded April 8, 1987 (Milestone III A).

The first DASO and the IOC were delayed due to scheduled corrective action for the PEM failures and as a result of destruction of the Hercules Propellant Mix Building #2, used for casting second-stage missile motors. IOC was achieved with full missile outload.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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

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9d. (U) Schedule (Cont'd):
(D-5) Navy Program Review.

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

10. (U) Performance Characteristics:

a. (U) Performance --	PdF	Approved	Demon-	Current
		Program	strated	
		Objective/Threshold	Perf	

(b)(1)

b. (U) Previous Change Explanations --

Latest estimate of military characteristics for the warhead for the TRIDENT II (D-5) MK-5 Re-Entry Body as cited by the joint DOD/DOE Military Liaison Committee in letter dated July 23, 1984.

Latest estimate of system reliability as provided in TRIDENT II (D-5) Decision Coordinating Paper (DCP) Update of February 24, 1987. Maximum Range Full Payload, System Reliability, and System CEP estimates are based on latest engineering estimate provided by the Navy to the Joint Chiefs of Staff with later revisions based on available submarine launch data.

c. (U) Current Change Explanations --

(b)(1)

d. (U) References --

(U) Production Estimate:
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.

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

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	8434.9	8420.5	8414.8
Procurement	17588.5	12098.9	12056.8
Flyaway	(14471.2)		(8815.3)
Other weapon systems	(3082.9)		(3105.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(34.4)		(136.5)
Construction (MILCON)	532.9	363.2	365.4
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 83 Base-Year S	26556.3	20882.6	20837.0
Escalation	8962.2	7286.9	6865.5
Development (RDT&E)	(1018.3)	(998.9)	(996.5)
Procurement	(7808.4)	(6221.4)	(5798.5)
Construction (MILCON)	(135.5)	(66.6)	(70.5)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year S	35518.5	28169.5	27702.5

b. (U) Quantity --			
Development (RDT&E)	30	28	28
Procurement	<u>815</u>	<u>434</u>	<u>434</u>
Total	845	462	462

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

(b)(1)

e. (U) References --

(U) Production Estimate:

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.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated May 25, 1995.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY83S)	20837.0	20882.6	
(2) Quantity	462	462	
(3) Unit Cost	45.102	45.200	-0.22
b. (U) Procurement			
(1) Cost (BY83S)	12056.8	12098.9	
(2) Quantity	434	434	
(3) Unit Cost	27.781	27.878	-0.35

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	9453.2	25396.9	668.4	35518.5
Previous Changes:				
Economic	-21.6	+309.8	-10.4	+277.8
Quantity	-48.0	-9776.2	-	-9824.2
Schedule	-	+1568.9	+25.6	+1594.5
Engineering	-	-	-	-
Estimating	+26.9	+212.5	-246.8	-7.4
Other	-	-	-	-
Support	-	+608.4	-	+608.4
Subtotal	-42.7	-7076.6	-231.6	-7350.9
Current Changes:				
Economic	0.1	-414.6	-0.9	-415.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.7	85.5	-	+86.2
Other	-	-	-	-
Support	-	-135.9	-	-135.9
Subtotal	+0.8	-465.0	-0.9	-465.1
Total Changes	-41.9	-7541.6	-232.5	-7816.0
Current Estimate	9411.3	17855.3	435.9	27702.5

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	8434.9	17588.5	532.9	26556.3
Previous Changes:				
Quantity	-40.0	-5486.1	-	-5526.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.4	-221.5	-167.5	-369.6
Other	-	-	-	-
Support	-	+218.0	-	+218.0
Subtotal	-20.6	-5489.6	-167.5	-5677.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.5	51.7	-	+52.2
Other	-	-	-	-
Support	-	-93.8	-	-93.8
Subtotal	+0.5	-42.1	-	-41.6
Total Changes	-20.1	-5531.7	-167.5	-5719.3
Current Estimate	8414.8	12056.8	365.4	20837.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Deleted two development flight test missiles.

Estimating: Reclassification of costs as escalation for current and prior years. Adjustment to prior years and reallocation of funds from TRIDENT II Submarine. Congressional reductions. Revised estimates for incentive payments and based on new contract experience.

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

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Additional 56 missiles required for two additional submarines and subsequent deletion of 443 missiles associated with reduced flight test program requirements and with decision to support a 10-boat TRIDENT II submarine force vice an 18-boat force. While maintaining a 10-boat force, the annual missile quantities have been further reduced resulting in a decrease in the missile inventory objective from 428 to 389. An increase of 45 missiles required to support a 14-boat SSBN force.

Schedule: Deferral of 21 missiles and 20 guidance systems from FY 1990 to FY 2002. Deferral of TRIDENT II (D-5) backfit program. Deferral of 12 missiles from FY 1993/1994 to FY 2004. Program stretch-out from FY 1999 to FY 2000. Change in annual procurement buy due to program stretch-out.

Estimating: Reclassification of costs as escalation for current and prior years and revised estimates based on latest contract experience. Increased costs due to missile production stretch-out. Adjustment made for quantity allocation. Revised estimates due to a change in acquisition strategy.

Support: Reclassification of costs as escalation for current and prior years and revised estimates on support items based on current pricing. Increased support associated with stretch-out of missile production. Deletion of D-5 Backfit outfitting costs at SWFPAC, Bangor. Decreased support due to a reduction of 39 missiles. Increased support costs due to addition of 45 missiles.

MILCON

Economic: Revised escalation indices.

Schedule: Deferral of West Coast D-5 capability.

Estimating: Reclassification of costs as escalation for current and prior years. Revised construction estimates. Deletion of West Coast D-5 capability. Increase associated with D-5 Backfit program. Reduction due to cancellation of FY 1992 A-School relocation.

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

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
Increase in funds necessary to pay earned incentives. (Estimating)	+0.6	+0.8
RDT&E Subtotal	<u>+0.5</u>	<u>+0.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-415.4
Economic adjustment for negative program change. (Economic)	N/A	+0.8
Adjustment for Current and Prior Inflation. (Estimating)	+25.3	+38.8
Revised estimates based on contract experience and reduction in annual procurement quantities of critical components. (Estimating)	+26.4	+46.7
Adjustment for Current and Prior Inflation. (Support)	+9.8	+15.4
Revision based on a reduction to production support infrastructure. (Support)	-103.6	-151.3
Procurement Subtotal	<u>-42.1</u>	<u>-465.0</u>
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
50.934	-8.100	-2.000	0.400	--	0.800	--	--	-8.900	42.034

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
42.034	-0.298	13.581	3.451	--	0.171	--	1.023	17.928	59.962

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

a. (U) Procurement --			Initial Contract Price		
(U) <u>MISSILE FOLLOW-ON PROD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN, SUNNYVALE, CA			\$1185.5	N/A	51
N00030-92-C-0092, CPIF/FF					
Award: October 1, 1991					
Definitized: October 1, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1212.0	N/A	51	\$1204.8	\$1196.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-5.0	\$-2.8	
Cumulative Variances To Date (05/28/95)			\$-5.1	\$-2.3	
Net Change			\$-0.1	\$0.5	

Explanation of Change:

The cost and schedule variance are essentially unchanged in relationship to the total allocated budget.

This will be the last report on this contract.

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

<u>(U) MISSILE FOLLOW-ON PROD:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
LOCKHEED MARTIN, SUNNYVALE, CA					
N00030-93-C-0093, CPIF/FF	\$1118.7	N/A	39		
Award: October 1, 1992					
Definitized: October 1, 1992					
Current Contract Price			Estimated Price At Completion		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$1117.9	N/A	39	\$1099.4	\$1082.4
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$-5.3	\$-2.1	
Cumulative Variances To Date (11/26/95)			<u>\$8.7</u>	<u>\$-2.3</u>	
Net Change			\$14.0	\$-0.2	

Explanation of Change:

The cumulative to date cost variance has improved \$14 million. The change is driven primarily by efficiencies at the Joint Venture rocket motor manufacturer. The (\$2.3) million schedule variance is essentially on target when compared to the total allocated budget. This contract includes funding for 18 (D-5) missiles for the United Kingdom.

<u>(U) MISSILE FOLLOW-ON PROD:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
LOCKHEED MARTIN, SUNNYVALE, CA					
N00030-94-C-0094, CPIF/FF	\$832.1	N/A	24		
Award: October 1, 1993					
Definitized: October 1, 1993					
Current Contract Price			Estimated Price At Completion		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$923.2	N/A	24	\$920.4	\$920.4
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$-1.1	\$-0.1	
Cumulative Variances To Date (11/26/95)			<u>\$3.2</u>	<u>\$-2.4</u>	
Net Change			\$4.3	\$-2.3	

Explanation of Change:

The \$4.3 million improvement in cost is attributed to efficiencies at the Joint Venture, rocket motor manufacturer.

The unfavorable (\$2.4) million schedule variance is driven by some

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

minor missile body manufacturing delays. There is no program impact foreseen.

(U) <u>MISSILE FOLLOW-ON PROD:</u> LOCKHEED MARTIN, SUNNYVALE, CA N00030-95-C-0095, CPIF/FF Award: November 3, 1994 Definitized: September 29, 1995	<table border="0"> <tr> <th colspan="3">Initial Contract Price</th> </tr> <tr> <th><u>Target</u></th> <th><u>Ceiling</u></th> <th><u>Qty</u></th> </tr> <tr> <td>\$827.7</td> <td>N/A</td> <td>18</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$827.7	N/A	18
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$827.7	N/A	18								

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$880.8	N/A	18	\$878.0	\$878.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date (11/26/95)	\$0.4	\$-1.7
Net Change	\$0.4	\$-1.7

Explanation of Change: None.

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

a. (U) Program Status --

- (1) Percent Program Completed: 63.3% (19 yrs/30 yrs)
- (2) Percent Program Cost Appropriated: 83.0% (\$22987.5 / \$27702.5)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY78-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	9411.0	0.3	-	-	9411.3
Procurement	12648.8	506.8	324.4	4375.3	17855.3
MILCON	420.6	-	-	15.3	435.9
O&M	-	-	-	-	-
Total	22480.4	507.1	324.4	4390.6	27702.5

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

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

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

1978				5.0	5.0	5.0	5.0	6.8
1979				5.0	5.0	5.0	5.0	8.4
1980				25.6	25.6	25.5	25.0	10.6
1981				96.7	96.7	96.4	93.6	10.6
1982				198.4	198.4	197.6	193.6	7.6
1983				343.9	351.0	346.6	341.2	4.9
1984				1368.5	1447.3	1446.9	1439.7	3.8
1985				1818.1	1982.6	1982.6	1980.6	3.4
1986				1731.3	1942.3	1942.3	1940.2	2.8
1987				1355.1	1565.3	1565.3	1554.6	2.7
1988				862.5	1029.7	1024.7	996.5	3.0
1989				439.3	546.5	546.5	546.5	4.2
1990				130.9	169.5	169.5	169.5	4.0
1991				32.1	43.0	43.0	43.0	4.3
1992				1.6	2.2	2.2	2.2	2.8
1993				0.3	0.4	0.4	0.3	2.7
1994								2.0

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Obliga- Program	Ex- pende		

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1995				0.3	0.5			1.9
1996				0.2	0.3			2.0
Subtot	28			8414.8	9411.3	9399.5	9336.5	

Appropriation: 1507 Weapons Procurement, Navy

1985				137.7	160.8	160.8	160.8	3.4
1986				420.7	508.4	508.4	496.8	2.8
1987	21		839.8	1075.6	1346.9	1342.9	1326.6	2.7
1988	66		1314.1	1562.7	2033.5	2033.5	2029.7	3.0
1989	66		1173.2	1359.8	1839.0	1827.3	1818.2	4.2
1990	41		796.4	1001.1	1400.6	1395.1	1340.7	4.0
1991	52		866.4	1054.4	1512.6	1510.3	1466.0	4.3
1992	28		555.8	745.7	1096.9	1094.8	1041.3	2.8
1993	21		480.2	652.6	978.1	964.5	849.1	2.7
1994	24		645.9	718.7	1100.7	1040.5	637.5	2.0
1995	18		387.7	429.2	671.3	599.6	215.1	1.9
1996	6		116.6	317.1	506.8	320.3	12.9	2.0
1997	7		128.7	198.6	324.4			2.2

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1998	7		124.8	179.9	300.4			2.2
1999	7		133.1	169.6	289.5			2.3
2000	12		195.9	306.0	533.9			2.2
2001	12		196.1	297.3	530.1			2.2
2002	12		278.7	306.7	558.9			2.2
2003	12		278.6	390.8	727.8			2.2
2004	12		153.8	188.3	358.5			2.2
2005	10		149.5	316.2	615.0			2.2
2006				50.2	99.7			2.2
2007				177.9	361.5			2.2
Subtot	434		8815.3	12056.8	17855.3	12798.0	11394.7	

Procurement costs in FY 2007 include cost to complete funding through FY 2027.

Appropriation: 1205 Military Construction, Navy

1984				72.8	79.3	44.8	44.8	3.8
1985				73.4	82.4	80.6	80.4	3.4
1986				109.3	126.3	126.3	126.3	2.8

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

1987				17.6	21.0	21.0	21.0	2.7
1988				14.6	18.1	17.9	17.9	3.0
1989				12.0	15.4	15.3	15.1	4.2
1990				5.7	7.6	5.9	5.9	4.0
1991				51.3	70.5	62.7	62.3	4.3
1992								2.8
1993								2.7
1994								2.0
1995								1.9
1996								2.0
1997								2.2
1998								2.2
1999								2.3
2000				1.1	1.9			2.2
2001				4.4	7.6			2.2
2002				2.1	3.7			2.2
2003								2.2
2004								2.2

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

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2005				0.3	0.6			2.2
2006				0.8	1.5			2.2
Subtot				365.4	435.9	374.5	373.7	
Grand Total	462		8815.3	20837.0	27702.5	22572.0	21104.9	

MILCON costs in FY 2000 through FY 2006 are associated with the Backfit of 4 C-4 boats to the D-5 configuration.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	28/28
	Procurement	293/295

b. (U) Approved Design-to-Cost Objective -- N/A.

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 by appropriation through FY 2027. The source of the costs displayed is the Program Manager's estimate as reflected in the FY 1997 President's Budget through FY 2001 and extended through FY 2027. O&S costs and assumptions for the antecedent system TRIDENT I (C-4) have not previously been developed.

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

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

Cost Element	Avg Annual Cost Per Weapon System	Avg Annual Cost Per Weapon System
O&M,N	448.1	N/A
OPN	44.5	N/A
WPN	3.3	N/A
Total	495.9	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	738.9	21.1	21.7	928.2	1709.9
Total	738.9	21.1	21.7	928.2	1709.9

The increase in the balance to complete costs reflects a correction of last year's estimate to then-year dollars.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: DDG 51 DESTROYER

AS OF DATE: December 31, 1995

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RECOMMENDED

1. (U) Designation and Nomenclature (Preferred Name):
DDG 51 Guided Missile Destroyer; ARLEIGH BURKE CLASS

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

AEGIS PROGRAM MANAGER	RADM G.A. HUCHTING, USN
2531 JEFFERSON DAVIS HIGHWAY	Assigned: August 2, 1991
ARLINGTON, VA 22242-5165	AV 332-7396 COMM (703) 602-7396

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

RDT&E: PE 0604307N PROCUREMENT: APPN 1611 ICN 24222N (Navy)	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">[REDACTED]</p> </div>
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5. (U) Related Programs:
CG 47, Joint Tactical Information Data System (JTIDS), NAVSTAR GPS,
EHF SATCOM, UHF SATCOM, SM-2 (MR), TOMAHAWK, HARPOON, PHALANX/ESSM,

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DDG 51 DESTROYER, December 31, 1995

5. (U) Related Programs (Cont'd):

AN/SQQ-89, MK-46, MK-50 Torpedo, LAMPS MK-I/MK-III, VERTICAL LAUNCH, VERTICAL LAUNCH ASROC, Armed Helicopter (SH-60), AEGIS Japanese FMS, CEC.

6. (U) Mission and Description:

- The DDG 51 is a multi-mission guided missile destroyer designed to operate offensively and defensively, independently, or as units of Carrier Battle Groups and Surface Action Groups, in support of Underway Replenishment Groups and the Marine Amphibious Task Forces in multi-threat environments that include air, surface, and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare (LIC/CALOW) scenarios as well as open ocean conflict providing or augmenting power projection and forward presence requirements.

- The DDG 51 Class ships provide outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs. They feature extraordinary seakeeping and low observability characteristics.

- The DDG 51 features the AEGIS Weapon System (AWS), which has quick reaction time, high firepower, and improved Electronic Countermeasures (ECM) capability in Anti-Air Warfare (AAW). The ships' Anti-Submarine Warfare (ASW) System provides superior long range multi-target detection and engagement capability with two embarked LAMPS MK-III helicopters (Flight IIA, DDG 79 and follow). Their Tomahawk, Harpoon, and MK-45 gun weapon systems provide excellent strike and surface 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.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
Funding for the lead ship, ARLEIGH BURKE, was provided in FY 1985 with the lead ship construction contract awarded, as the result of full and open competition, to Bath Iron Works (BIW), Bath, Maine in April 1985. The Navy established Ingalls Shipbuilding Incorporated (ISI) as the second source for DDG 51 Class construction by awarding ISI, as the result of full and open competition, the DDG 52 construction contract in May 1987. Milestone IIIA which granted

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7a. (U) Program Highlights (Cont'd):

limited production approval through FY 1989 was approved in October 1986. Approval for limited production was amended in each subsequent year.

SECDEF's Major Warship Review in 1991 validated the Navy requirement for the ARLEIGH BURKE Class and approved the introduction of Flight upgrades. Flight II was incorporated in the last ship in FY 1992 (DDG 72).

DDG 51 ship custody transfer occurred on 29 April 1991 and was commissioned USS ARLEIGH BURKE on 4 July 1991. The ARLEIGH BURKE deployed with 6th Fleet forces in the Mediterranean. SCN funding for ARLEIGH BURKE completed in February 1993 at a final cost of \$1093M (FY 83\$), \$7M below the \$1100 (FY 83\$) threshold for the lead ship established by SECNAV in February 1983. Ships 6-10 are estimated to be \$121M (FY 83\$) below the \$700M (FY 83\$) SECNAV unit cost threshold.

The Navy, in conjunction with the shipbuilders and prime equipment contractors, has successfully identified and developed affordability and acquisition reform initiatives that have reduced the cost of this class while ensuring critical operational performance is maintained. These cost reductions are reflected in the FY 97 Budget Estimates Submission.

The Office of the Secretary of Defense established the DDG 51 Flight IIA program as an ACAT ID in July 1992. An Acquisition Decision Memorandum (ADM) was signed on 2 February 1994 approving Flight IIA introduction in FY 94 and a continuation of the program at a 3 ship per year profile for a total program of 57 ships. BIW was awarded the first Flight IIA ship, the last ship in FY 94.

The Shock Trial on the USS JOHN PAUL JONES (DDG 53) was successfully completed in June 1994. The ship's performance under shock was outstanding. Warfighting and Full Power capability were maintained or quickly regained after each detonation.

b. (U) Significant Developments Since Last Report --

The Navy is authorized to construct six DDG 51 Class Destroyers in FY 96 and FY 97. These ships will be awarded as a firm/option contracts (two in FY 96 and four in FY 97). In awarding these contracts the Navy will continue the award sequence used during FY 94 and FY 95. FY 96 will contract for three ships, two fully funded ships (DDG 83/84) and one additional ship (DDG 85) using advance procurement funds (\$104M) for production planning and material ordering to accelerate the DDG 85 to an FY 96 production schedule. The balance of funds (\$605M) and an additional three fully funded ships are

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DDG 51 DESTROYER, December 31, 1995

7b. (U) Program Highlights (Cont'd):

budgeted in FY 97.

In FY 94/95, ASN(RD&A) decided to allocate three DDG 51 Class Destroyers to BIW and three to ISI pursuant to the authority of Title 10 U.S.C. 2304 (c) (3). Simultaneously, the Navy also conducted a study to determine the best approach to procure the remaining 25 ships. Recommendations included: (1) maintain two shipbuilders for the foreseeable future; (2) continue current AEGIS initiatives in value engineering, cost control and cost avoidance; and (3) develop innovative contracting and business practices to incentivize shipbuilders and vendors to reduce costs. The method adopted is the PRO concept (Profit Related to Offer) competition, whereby work is equally allocated between shipyards, but profit levels are competitively determined. These recommendations have been incorporated into the FY 96 Acquisition Plan.

The FY 96/97 Biennial Budget Estimates identified descopes in shipbuilding and GFE lines in FY 94 and FY 95. Funding for these descopes was identified in the 1995 Ship Cost Adjustment. The request for these funds was denied by Congress. Mr. Douglass (ASN(RD&A)) sent letters to the four Congressional committees stating the Navy will submit a reprogramming request to assure that fully capable DDG 51 Class ships are delivered to the Navy by the shipbuilders. Funds need to be in place by October 1996 to allow sufficient procurement lead times to meet ship schedules with no impact to cost.

Total Ship Survivability Tests (TSST) on USS STOUT (DDG 55) and USS LABOON (DDG 58) were completed in the VACAPES OPEREA in 1995. Due to the unique nature of this trial, a dry-run was conducted on DDG 55 to test TSST implementation and data recording procedures. This dry-run TSST was successfully conducted on 7-8 February 1995. Lessons learned from the dry-run were applied to the formal TSST on DDG 58 which was successfully conducted on 28-30 August 1995. A final report on the TSST is available.

Under Secretary of Defense (Acquisition and Technology) redesignated the DDG 51 Destroyer program from an ACAT 1D to an ACAT 1C program.

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

- DDG 73 (DECATUR) started fabrication 15 January 1995.
- DDG 67 (COLE) launched 10 February 1995.
- DDG 66 (GONZALEZ) launched 18 February 1995.
- USS LABOON (DDG 58) commissioned 18 March 1995.
- DDG 74 (MCFAUL) started fabrication 24 April 1995.

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7b. (U) Program Highlights (Cont'd):

- USS RUSSELL (DDG 59) commissioned 20 May 1995.
- USS PAUL HAMILTON (DDG 60) commissioned 27 May 1995.
- DDG 75 (DONALD COOK) started fabrication 18 June 1995.
- USS RAMAGE (DDG 61) commissioned 22 July 1995.
- DDG 69 (MILIUS) launched 1 August 1995.
- DDG 68 (THE SULLIVANS) launched 12 August 1995.
- USS FITZGERALD (DDG 62) commissioned 14 October 1995.
- USS STETHEM (DDG 63) commissioned 21 October 1995.
- DDG 76 (HIGGINS) started fabrication 26 November 1995.
- DDG 65 (BENFOLD) ship custody transfer occurred 4 December 1995.

The DDG 51 program will satisfy mission requirements.

c. (U) Changes Since As Of Date --

DDG 51 Class construction has achieved production milestones since the as of date. The more significant are:

- DDG 70 (HOPPER) launched 6 January 1996.
- DDG 64 (CARNEY) ship custody transfer occurred 26 January 1996.

8. (U) Threshold Breaches:

There are breaches to the APB dated 2 June 1995 for the following schedule milestones: Propulsion Engine P3I Initial Ship Installation and Propulsion Engine P3I Engine Support Capability Date. A revised APB will be forwarded upon completion of tests currently scheduled for June 1996.

There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Complete Concept Design	N/A	DEC 80	DEC 80
DSARC I	JUN 81	JUN 81	JUN 81
Complete Preliminary Design	N/A	MAR 83	MAR 83
DSARC II	DEC 83	DEC 83	DEC 83
Complete Contract Design	N/A	JUN 84	JUN 84
DDG 51 Contract Award	APR 85	APR 85	APR 85
Milestone IIIA	OCT 86	OCT 86	OCT 86
DDG 52 Contract Award	JAN 87	MAY 87	MAY 87
DDG 53 Contract Award	N/A	SEP 87	SEP 87
Lay Keel DDG 51	N/A	DEC 88	DEC 88

DDG 51 DESTROYER, December 31, 1995

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

(U) Milestones (Cont'd) --

	Production Estimate	Approved Program	Current Estimate
Launch DDG 51	N/A	SEP 89	SEP 89
DDG 51 Delivery	N/A	APR 91	APR 91
Launch DDG 52	N/A	MAR 91	MAY 91
OPEVAL	N/A	FEB 92	FEB 92
DDG 51 IOC	OCT 90	FEB 93	FEB 93
DDG 52 Delivery	N/A	MAY 92	OCT 92
DDG 53 Delivery	N/A	FEB 93	AUG 93
Milestone IV	N/A	APR 93	OCT 93
DDG 51 Flight IIA Contract Award	N/A	MAR 94	MAR 94
DDG 51 Flight IIA Delivery	N/A	SEP 99	SEP 99
DDG 51 Flight IIA IOC	N/A	OCT 00	OCT 00
Organic Support Available	N/A	JUL 91	JUL 91
Depot Support Available	N/A	JUL 91	JUL 91
SH-60B Hellfire IOC	N/A	DEC 97	DEC 97
Complete ESSM COEA	N/A	NOV 94	NOV 94
ESSM Milestone IV	N/A	NOV 94	NOV 94
ESSM IOC	N/A	AUG 02	AUG 02
Propulsion Engine P3I Initial ship Installation	N/A	DEC 96	MAR 01(Ch-1)
Propulsion Engine P3I Engine Support Capability Date	N/A	DEC 01	MAR 06(Ch-

b. (U) Previous Change Explanations --

DDG 51 IOC was rescheduled to ensure the ship was completed to Navy standards. The extension to the schedule provided the time necessary for lead ship operational testing.

DDG 52 launch and delivery was adjusted due to the incorporation of helicopter rearming and facilities upgrades, as recommended by Congress. The DDG 53 delivery was rescheduled to permit the shipbuilder to achieve greater production and shipyard efficiency.

The Flight IIA Milestone IV PRG/DAB review, originally scheduled for July 1993 and subsequently rescheduled to October 1993, was approved through an Acquisition Decision Memorandum (ADM) signed on 2 February 1994. Flight IIA contract award was contingent upon issuance of the ADM.

Complete ESSM COEA was adjusted due to the delayed receipt of the Advanced Medium Range Surface to Air Missile (AMRSAM) data to the Center for Naval Analysis (CNA) and difficulties related to modeling the NATO Sea Sparrow Missile System (NSSMS) ship configuration.

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

ESSM Milestone IV date was contingent upon staffing of the Operational Requirements Document (ORD) and completion of the ESSM COEA.

ESSM will be introduced on the first AEGIS Destroyer in the FY 97 program, although earlier planned for introduction on the last FY 96 ship, consistent with AEGIS Combat System Baseline 6, phase II introduction. Funding was not available to incorporate ESSM in FY 96.

c. (U) Current Change Explanations --

The DDG 51 Class schedule adjustments are as follows:

(CH-1)

	FROM	TO
Propulsion Engine P3I Initial Ship Installation	Dec 00	Mar 01
Propulsion Engine P3I Engine Support Capability Date	Dec 05	Mar 06

The Propulsion Engine P3I Initial Ship Installation milestone has been rescheduled for introduction on the last ship in FY 01. The Engine Support Capability Date has been rescheduled to FY 06. These changes are due to budget constraints and engine development. A major re-evaluation of the Propulsion Engine P3I (ICR) will occur after testing in June 1996. A revised Acquisition Program Baseline will be forwarded upon completion of tests.

d. (U) References --

(U) Production Estimate:

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

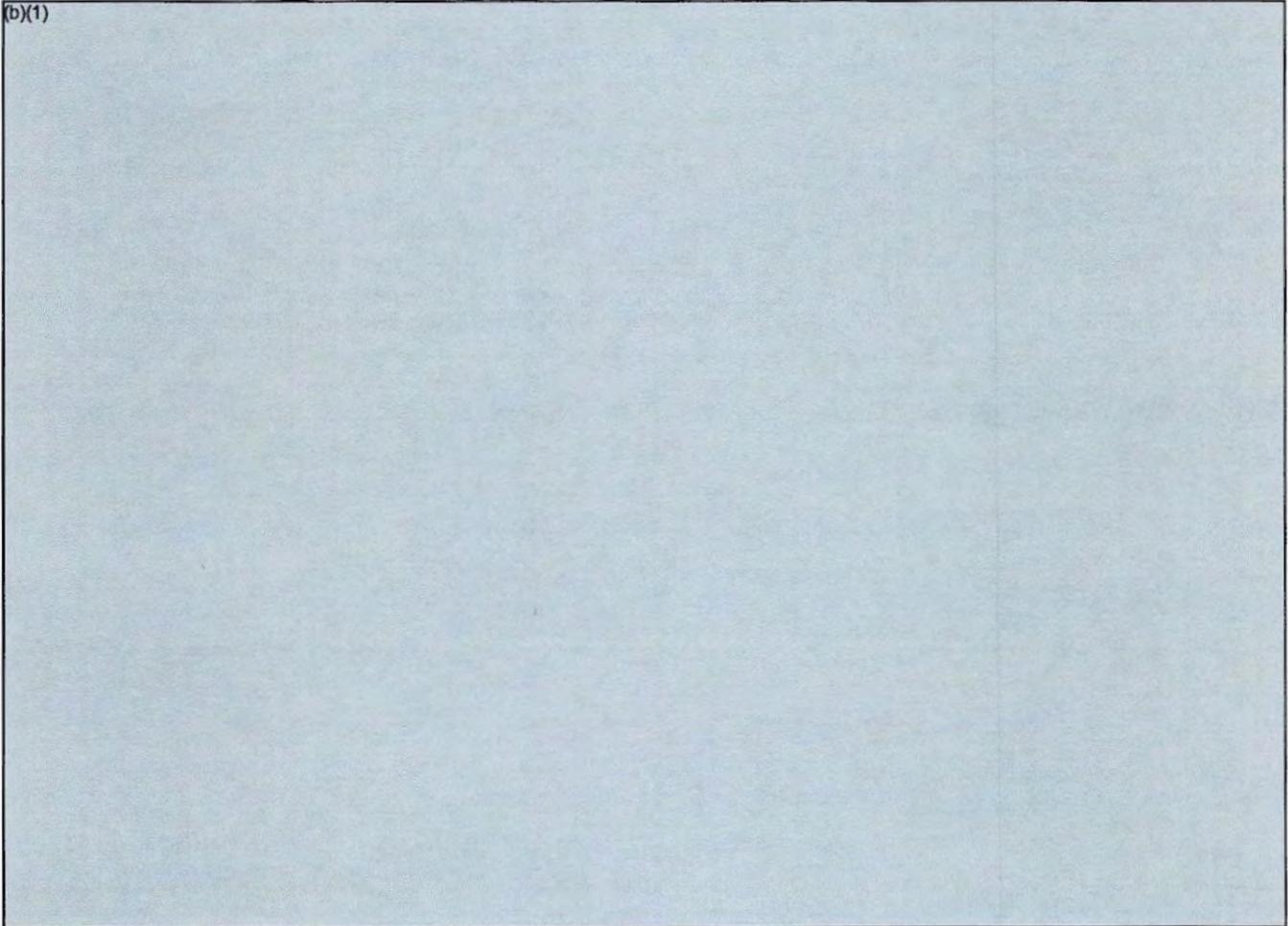
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 02, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
SHIP:					
Length (ft)	466	N/A	/ N/A	N/A	471
Beam (ft)	59	N/A	/ N/A	N/A	59
Navigational Draft (ft)	30.6	N/A	/ N/A	N/A	31.7
Displacement (long tons)	8300	N/A	/ N/A	N/A	9300
Propulsion LM (Gas Turbines)	2500	N/A	/ N/A	N/A	2500
Accommodations	341	N/A	/ N/A	N/A	380
MOBILITY:					
Speed (knots)	30	30	/ 30	TBD	30

(b)(1)



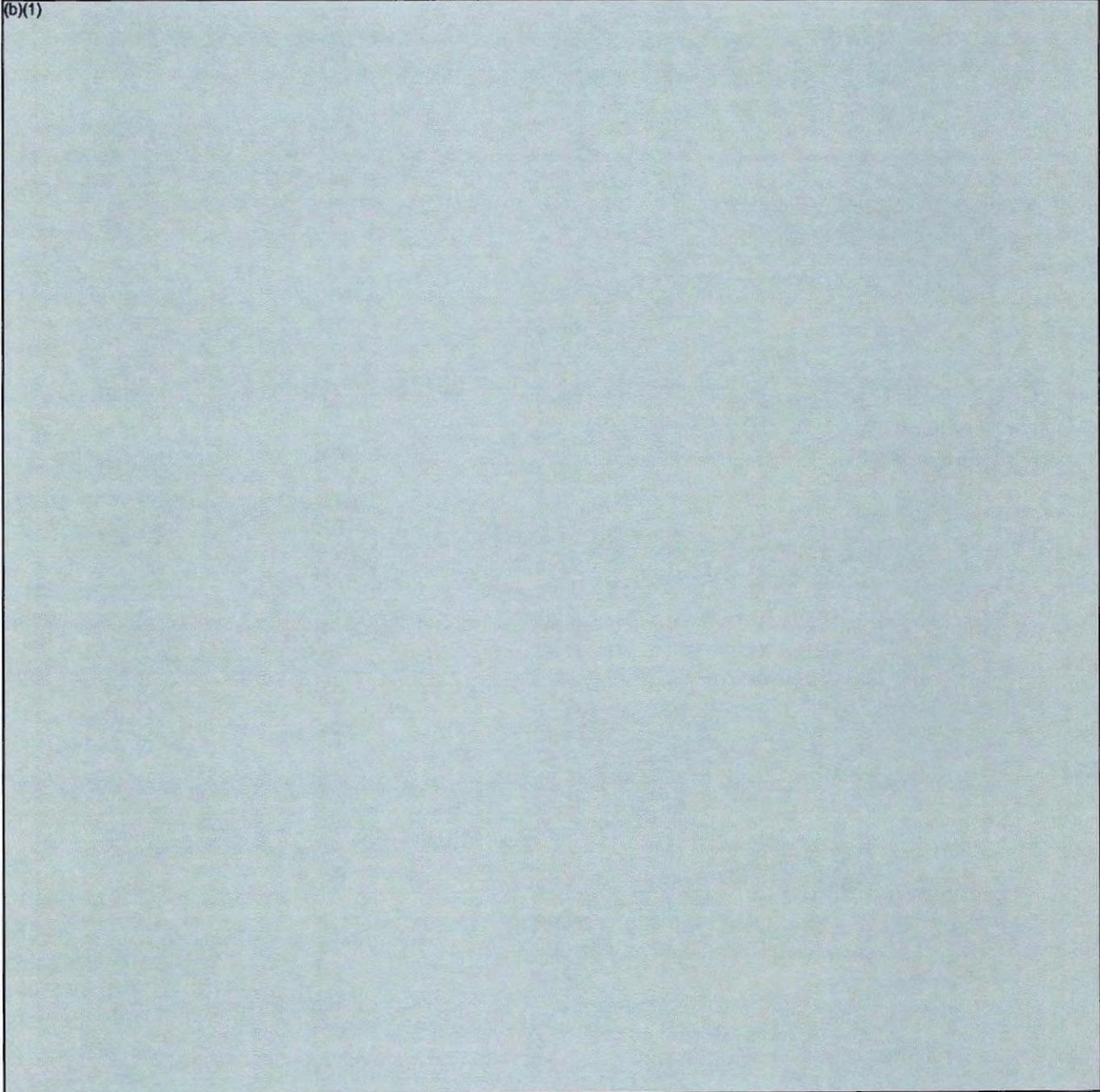
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10a. (U) Performance Characteristics (Cont'd):

<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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(b)(1)



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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Fragmentation Armor	N/A	N/A	/ N/A	(9)	(9)
AVAILABILITY:					
Probability of availability (overall)	N/A	N/A	/ N/A	MET	0.75
Combat System	N/A	N/A	/ N/A	0.98	0.85
Propulsion	N/A	N/A	/ N/A	0.96	0.88
Meantime between major/critical interrupts for AAW mission with SM-2 (hrs)	N/A	N/A	/ N/A	7.0	5.5
Armament					
Anti-Submarine Warfare					
ASW System	AN/SQQ-89	N/A	/ N/A	N/A	AN/SQQ-89(V)10
ASROC	VLA	N/A	/ N/A	N/A	VLA
Helos	SEAHAWK; LAMPS	2	/ 2	2	2
		EMBARKED HELOS	EMBARKED HELOS	EMBARKED HELOS	EMBARKED HELOS
Anti-Air Warfare					
Launchers	MK 41 VLS	N/A	/ N/A	N/A	MK 41 VLS
Missiles	SM-2 MR	N/A	/ N/A	N/A	SM-2 MR
Missile Fire Control System	3 MK 99	N/A	/ N/A	N/A	3 MK 99
Guns	2 PHALANX	N/A	/ N/A	N/A	2 PHALANX
Anti-Surface/Strike Warfare					
Guns	1 5"/54	N/A	/ N/A	N/A	1 5"/54
Gunfire Control System	MK 160	N/A	/ N/A	N/A	MK 160
Anti-Ship Cruise Missile	HARPOON	N/A	/ N/A	N/A	N/A
Cruise Missile	TOMAHAWK	N/A	/ N/A	N/A	TOMAHAWK
Electronic Warfare	SLQ-32 SRBOC	N/A	/ N/A	N/A	SLQ-32 (V)3, SRBOC, Combat DF

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

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Radars				
Surface	SPS-67	N/A / N/A	N/A	SPS-67
(b)(1)				

b. (U) Previous Change Explanations --

Helicopter rearming and facilities upgrades were added to the DDG Class beginning with the DDG 52. Long ton displacement increased to 8315 LT as a result of increasing ship propulsion to 100,000 shaft horsepower.

The FY 94 budget submission requested DDG 51 Flight IIA beginning with the last FY94 ship. Changes from the Flight II ships will be as follows: 1) Addition of Organic LAMPS MK III Helicopter Capability, Dual Helicopter Facility with RAST, 6 VLS Cells, and Affordability Items; 2) Deletion of CIWS (when ESSM available), Harpoon, and TACTAS would be reconstitutable. A revised Acquisition Program Baseline (APB) was approved on 18 March 94 reflecting data for the Flight IIA program.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 02, 1995.

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	979.8	1905.8	2076.6
Procurement	15948.3	39092.2	39846.1
Basic Ship Costs	(5383.6)		(17266.8)
EM&E and Combat Systems	(9427.9)		(20250.6)
Other Costs	(621.9)		(804.5)
OP/PD	(514.9)		(1524.2)
Total Sailaway	(15948.3)		(39846.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.6	25.5	25.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 87 Base-Year \$	16953.7	41023.5	41948.2
Escalation	3163.8	15776.4	15147.0
Development (RDT&E)	(-63.2)	(335.4)	(353.5)
Procurement	(3224.8)	(15438.7)	(14791.2)
Construction (MILCON)	(2.2)	(2.3)	(2.3)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	20117.5	56799.9	57095.2

The Milestone IIIA (Oct 86) production decision planned for 5 ships per year. The Approved Program and Current Estimates provide for 2.7 ships per year within the FYDP in accordance with Program Decision Memorandum (PDM-752), however the current estimate calls for 2.8 ships per year.

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>23</u>	<u>57</u>	<u>57</u>
Total	23	57	57

c. (U) Foreign Military Sales/International Cooperative Programs -- AEGIS Japanese FMS.

d. (U) Nuclear Costs -- None.

e. (U) References --

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

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated June 02, 1995.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY87\$)	41948.2	41023.5	
(2) Quantity	57	57	
(3) Unit Cost	735.93	719.71	2.25
b. (U) Procurement			
(1) Cost (BY87\$)	39846.1	39092.2	
(2) Quantity	57	57	
(3) Unit Cost	699.05	685.83	1.93

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	916.6	19173.1	27.8	20117.5
Previous Changes:				
Economic	-0.3	-1570.9	+0.2	-1571.0
Quantity	-	+31714.7	-	+31714.7
Schedule	-	+1261.1	-	+1261.1
Engineering	-	+1965.7	-	+1965.7
Estimating	+1564.9	+3490.8	-	+5055.7
Other	-	-	-	-
Support	-	-	-0.2	-0.2
Subtotal	+1564.6	+36861.4	-	+38426.0
Current Changes:				
Economic	-64.1	-1150.2	-	-1214.3
Quantity	-	-	-	-
Schedule	-	-100.4	-	-100.4
Engineering	-	-	-	-
Estimating	13.0	-146.6	-	-133.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-51.1	-1397.2	-	-1448.3
Total Changes	+1513.5	+35464.2	-	+36977.7
Current Estimate	2430.1	54637.3	27.8	57095.2

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

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	979.8	15948.3	25.6	16953.7
Previous Changes:				
Quantity	-	+21363.6	-	+21363.6
Schedule	-	-	-	-
Engineering	-	+1293.2	-	+1293.2
Estimating	+1089.9	+1021.4	-	+2111.3
Other	-	-	-	-
Support	-	-	-0.1	-0.1
Subtotal	+1089.9	+23678.2	-0.1	+24768.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	6.9	219.6	-	+226.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+6.9	+219.6	-	+226.5
Total Changes	+1096.8	+23897.8	-0.1	+24994.5
Current Estimate	2076.6	39846.1	25.5	41948.2

b. (U) Previous Change Explanations --

RDTE&E

Economic: Revised escalation indices
 Estimating: Revised program funding requirements

Procurement

Economic: Revised escalation indices
 Quantity: Addition of 34 ships (FY 1993-2004)
 Schedule: Change in acquisition profile (FY 1987-FY 2004)
 Engineering: Flight II introduced in FY 92 and Flight IIA introduced on the last ship in FY 94. Also, incorporates Intercooled Recuperative Gas Turbine and Warfighting Upgrades.
 Estimating: Revised procurement estimates for ship construction

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

and ship systems including the impact of acquisition strategy revisions, GFE savings, revised outfitting and post delivery requirements due to schedule and quantity changes, current and prior year revisions due to cost adjustments for escalation and estimating.

MILCON

Economic: Revised escalation indices
Support: Revised program funding requirements

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised December 1995 escalation rates (Economic)	N/A	-64.1
Revised program funding estimates (Estimating)	+6.9	+13.0
	<u> </u>	<u> </u>
RDT&E Subtotal	+6.9	-51.1
(2) <u>Procurement</u>		
Revised December 1995 escalation rates (Economic)	N/A	-1150.2
Change in profile for the 57 ships previously submitted from 3,2,3,3,3,4 (FY 97-FY 02) to 4,2,3,3,3,3 (FY 97-FY 02) (Schedule)	N/A	-100.4
Revised ship construction and GFE cost estimates (FY 96-FY 04) (Estimating)	+276.8	-80.7
Revisions to current (FY 96) and prior year (FY 85-FY 95) program due to (BY 87\$) cost adjustments for escalation and estimating (Estimating)	-57.2	-65.9
	<u> </u>	<u> </u>
Procurement Subtotal	+219.6	-1397.2

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1217.1	-233.2	-263.2	15.1	-25.1	145.8	--	18.2	-342.4	874.7

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
874.7	-48.87	34.66	20.36	34.49	86.35	--	--	126.99	1001.7

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

a. (U) Procurement --

(U) DDG 59, 61, 63, 65, 67 CONST:
 INGALLS SHIPBUILDING, INC., PASCAGOULA, MS
 N00024-90-C-2800, FPI
 Award: February 22, 1990
 Definitized: January 16, 1991

	Initial Contract Price		
	Target	Ceiling	Qty
	\$1200.3	\$1376.9	5

	Current Contract Price			Estimated Price At Completion	
	Target	Ceiling	Qty	Contractor	Program Manager
	\$1310.6	\$1509.9	5	\$1326.2	\$1381.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$40.7	\$-75.7
Cumulative Variances To Date	\$53.7	\$-58.9
Net Change	\$13.0	\$16.8

Explanation of Change:

Cost variance is driven by material. Schedule variance is driven by material, and labor and overhead performance. The first four ships all delivered on time.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future

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

changes estimates, nor escalation compensation commitments (\$206.4M).

(U) <u>DDG 60,62,64,66 CONSTRUCT:</u>			<u>Initial Contract Price</u>		
BATH IRON WORKS, BATH, ME			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-90-C-2801, FPI			\$1117.8	\$1293.8	4
Award: February 22, 1990					
Definitized: January 16, 1991					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1142.4	\$1330.5	4	\$1191.1	\$1210.6	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-43.6	\$-8.2	
Cumulative Variances To Date			\$-44.5	\$-0.4	
Net Change			\$-0.9	\$7.8	

Explanation of Change:

Cost variance is due to labor and overhead performance. Schedule variance is driven by material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$148.4M).

(U) <u>DDG 68,70,72 CONSTRUCTIO:</u>			<u>Initial Contract Price</u>		
BATH IRON WORKS, BATH, ME			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-92-C-2805, FPI			\$784.3	\$904.6	3
Award: April 8, 1992					
Definitized: April 8, 1992					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$825.0	\$951.0	3	\$884.1	\$915.1	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-2.9	\$6.7	
Cumulative Variances To Date			\$-6.9	\$-5.8	
Net Change			\$-4.0	\$-12.5	

Explanation of Change:

Cost variance is driven by labor and overhead performance. Schedule

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15. (U) Contract Information (Cont'd):
variance is due to material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$168.9M).

			Initial Contract Price		
(U) <u>DDG 73,75,76 CONSTRUCTIO:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BATH IRON WORKS, BATH, ME					
N00024-93-C-2800, FPI			\$777.0	\$865.8	3
Award: January 19, 1993					
Definitized: January 19, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$783.2	\$873.4	3	\$870.5	\$872.1	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$-1.6	\$45.2	
Cumulative Variances To Date			<u>\$-1.2</u>	<u>\$-6.1</u>	
Net Change			\$0.4	\$-51.3	

Explanation of Change:

Cost and schedule variances are driven by material.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future changes estimates, nor escalation compensation commitments (\$196.9M).

			Initial Contract Price		
(U) <u>DDG 77,79,81 CONSTRUCTIO:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
BATH IRON WORKS, BATH, ME					
N00024-94-C-2808, FPI			\$964.5	\$1077.2	3
Award: July 20, 1994					
Definitized: January 4, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$975.5	\$1089.5	3	\$1050.1	\$1007.7	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			N/A	N/A	
Cumulative Variances To Date			<u>\$-4.2</u>	<u>\$-7.5</u>	
Net Change			\$-4.2	\$-7.5	

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

Explanation of Change:

Cost variance is driven by material, and labor and overhead performance. Schedule variance is due to material.

Program Manager's Estimated Price at Completion reflects a more favorable definitization of the Flight IIA ECP.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor escalation compensation commitments (\$215.4M).

(U) DDG 78,80,82 CONSTRUCTION INGALLS SHIPBUILDING, INC., PASCAGOULA, MS N00024-94-C-2800, FPI Award: July 20, 1994 Definitized: January 4, 1995	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$993.8	\$1107.5	3

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$996.9	\$1111.0	3	\$1050.6	\$1031.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$-2.8	\$27.5
Net Change	\$-2.8	\$27.5

Explanation of Change:

Cost and schedule variances are driven by material.

Program Manager's Estimated Price at Completion reflects a more favorable definitization of the Flight IIA ECP.

Note: Target Price, Ceiling Price, and Estimated Price at Completion do not include performance incentive arrangements, future change estimates, nor escalation compensation commitments (\$200.6M).

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

a. (U) Program Status --

- (1) Percent Program Completed: 56.7% (17 yrs/30 yrs)
- (2) Percent Program Cost Appropriated: 53.0% (\$30235.5 / \$57095.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY80-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2009)	<u>Total</u>
RDTE&E	1416.8	91.5	89.2	832.6	2430.1
Procurement	26395.5	2303.9	3480.9	22457.0	54637.3
MILCON	27.8	-	-	-	27.8
O&M	-	-	-	-	-
Total	27840.1	2395.4	3570.1	23289.6	57095.2

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY87 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Encl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1980				14.9	10.5	10.5	10.5	10.6
1981				45.1	35.3	35.3	35.3	10.6
1982				121.2	102.0	102.0	102.0	7.6
1983				170.8	150.7	150.7	150.7	4.9
1984				132.2	121.1	121.1	121.1	3.8
1985				146.5	138.8	138.4	138.4	3.4

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

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1986				96.0	93.5	93.5	92.5	2.8
1987				100.4	100.4	100.4	100.2	2.7
1988				90.7	93.4	93.4	93.4	3.0
1989				48.7	52.3	52.3	52.3	4.2
1990				36.1	41.2	41.2	39.2	4.0
1991				73.9	87.5	87.5	87.5	4.3
1992				71.6	87.2	86.2	85.2	2.8
1993				88.7	110.6	103.6	97.5	2.7
1994				80.8	102.7	93.9	84.4	2.0
1995				69.1	89.6	83.3	54.1	1.9
1996				69.2	91.5	51.6	2.0	2.0
1997				66.0	89.2			2.2
1998				58.2	80.5			2.2
1999				86.5	122.3			2.3
2000				80.2	115.9			2.2
2001				67.1	99.0			2.2
2002				55.5	83.8			2.2
2003				55.6	85.7			2.2

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

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2004				55.5	87.5			2.2
2005				42.2	68.0			2.2
2006				30.1	49.5			2.2
2007				16.3	27.5			2.2
2008				7.5	12.9			2.2
Subtot				2076.6	2430.1	1444.9	1346.3	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1984					78.5	78.5	77.7	3.6
1985	1	307.6	889.9	1171.6	1139.5	1135.7	1131.9	2.1
1986					98.1	97.5	96.2	1.4
1987	3	143.6	2180.3	2255.8	2485.6	2477.6	2411.5	1.5
1988				3.8	9.4	9.4	9.4	2.6
1989	4		2580.1	2478.0	2876.7	2862.9	2715.3	3.3
1990	5	11.2	3111.9	3017.5	3627.8	3569.3	3385.6	1.1
1991	4	2.9	2584.6	2522.7	3174.4	2998.6	2694.9	1.6
1992	5	29.5	3158.4	3099.1	4044.1	3602.4	2744.1	2.5
1993	4	6.1	2565.9	2571.6	3381.1	2837.4	1634.8	3.2

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

Fiscal Year	Qty	Flyaway FY87 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1994	3	63.8	1985.9	2063.4	2752.7	2009.6	637.3	4.2
1995	3	9.2	1951.3	1941.7	2727.6	1807.3	261.9	3.8
1996	2	36.2	1553.4	1614.0	2303.9	122.8	1.0	2.0
1997	4	29.6	2535.2	2507.9	3480.9			2.2
1998	2	85.5	1558.0	1651.0	2338.7			2.2
1999	3		2146.5	2123.6	3087.1			2.3
2000	3		2060.0	2044.1	3062.2			2.2
2001	3	29.6	2124.0	2157.7	3249.0			2.2
2002	3		2141.9	2190.9	3488.4			2.2
2003	2		1689.2	1764.0	2840.4			2.2
2004	3		2274.8	2292.9	3790.5			2.2
2005				104.5	161.6			2.2
2006				82.1	129.8			2.2
2007				90.5	146.2			2.2
2008				50.0	82.6			2.2
2009				47.7	80.5			2.2
Subtot	57	754.8	39091.3	39846.1	54637.3	23609.0	17801.6	

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

FY 84 and FY 86 Then Year figures are for advanced procurement for FY 85 and FY 87, respectively. The associated Base Year amounts are reflected in the year of the end item procurement.

Appropriation: 1205 Military Construction, Navy

1986				4.5	4.6	4.6	4.6	2.8
1988				13.5	14.7	14.7	14.7	3.0
1989				7.5	8.5	8.5	8.5	4.2
Subtot				25.5	27.8	27.8	27.8	
Grand Total	57	754.8	39091.3	41948.2	57095.2	25081.7	19175.7	

17. (U) Production Rate Data:

a. (U) Deliveries (Plan/Actual) -- To Date
 RDT&E 0/0
 Procurement 14/14

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S estimate projects costs for a 57 ship buy and encompasses the Flight I, II, and IIA designs. The Flight IIA design begins with the last ship in fiscal year 1994. There currently is no planned mid-life capability upgrade for the DDG-51 class over the service life. There are 22 Officers for Flight I, II, and IIA ships. There are 324 Enlisted personnel for Flight I ships, 330 Enlisted for Flight II ships, and 323 Enlisted for Flight IIA ships. The steaming hours are estimated as 4800 hours annually. The average annual cost per ship for Operating and Support costs, over the 40 year projected service life, is estimated at \$39.0M in FY87 dollars.

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

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

Cost Element	Average Annual Cost Per Ship	Average Annual Cost Per Ship
Personnel	10.2	N/A
Material	8.6	N/A
Purchased Services	0.5	N/A
Direct Depot Maint.	9.4	N/A
Direct Recurring Invest.	9.4	N/A
Indirect Costs	0.8	N/A
AEGIS Other Depot	0.1	N/A
Total	39.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OGM	35.2	14.8	11.9	12.3	74.2
Industrial Fund	---	---	---	---	---
Total	35.2	14.8	11.9	12.3	74.2

The Contractor Support Costs are combined costs for both the CG 47 AEGIS Class Cruiser and the DDG 51 Destroyer programs.

The FY 1995 & Prior column reflects FY 1994 and FY 1995 only.

Balance to Complete column reflects FY 98 only.

AMRAAM (AIM-120), December 31, 1995

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

RDT&E:

PE 0603316F, 0603370F
PE 0603370N Project W0981
PE 0604314F
PE 0604314N (Shared) Project E0981
PE 0207163F
PE 0207163N (Shared) Project E0981

PROCUREMENT:

APFN 1507 ICN 2206 (Navy) PE0204162N
APFN 1507 ICN 2206 (Navy) PE0206138M
APFN 3020 ICN MAMRAO (Air Force) PE0207163F

5. (U) Related Programs:

F-15, F-16, F-22, F/A-18, SEEK EAGLE, North Atlantic Treaty Organisation (NATO) Aircraft (United Kingdom Sea Harrier and German F-4F), Swedish Gripen, NATO European Fighter Management Agency (NEFMA).

6. (U) Mission and Description:

The AMRAAM program provides for the acquisition of the most advanced all-weather, all-environment medium range air-to-air missile system in response to USAF, USN, NATO, and other allied operational requirements for the 1989-2007 time period. The system is an active radar guided intercept missile with inherent Electronic Countermeasures (ECM) capabilities for air-to-air applications against massed penetration aircraft and is designed to augment the AIM-7 Sparrow.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In January 1979 Defense Systems Acquisition Review Council (DSARC) Milestone I validated the requirement for AMRAAM. In December 1981 the Full-Scale Development (FSD) contract was competitively awarded to Hughes Aircraft Company (Hughes). In July 1982 Raytheon Company (Raytheon) was selected as the follow-on contractor for competitive production of AMRAAM. In September 1982 DSARC Milestone II authorized FSD. In January 1989 Hughes completed flight testing and Raytheon completed second-source qualification testing. The live fire test program successfully ended in August 1989. The Defense Advisory Board (DAB) approved a revised production estimate of \$9.3B (FY84\$). This increase from the original cost cap of \$7.0B breached the Nunn-McCurdy thresholds. On April 13, 1990 the USD(A) certified the program to Congress. In May 1990 four AMRAAMs, fired from a single F-15 against four targets, killed their targets. The Missile Rail Launcher (MRL) achieved Initial Operational Capability (IOC) in May 1990. The first F-15 operational squadron was fully equipped with missiles in early December 1990.

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AMRAAM (AIM-120), December 31, 1995

7a. (U) Program Highlights (Cont'd):

The FY92 President's Budget reduced the AMRAAM procurement objective from 24,320 to 15,450 and stretched the program one year to FY99 (Lot XIII), resulting in a second Nunn-McCurdy unit cost breach. The USD(A) certified the program again to Congress on May 3, 1991. In March 1991 Hughes, with Raytheon as the primary subcontractor, garnered the Preplanned Product Improvement (P3I) Phase 1 contract. In support of Operation Desert Storm, AMRAAM achieved a Mean Time Between Maintenance (MTBM) of 1,300 hours.

On May 23, 1991 the DAB Milestone IIIB authorized the program to continue low rate production through FY92 (Lot VI). AMRAAM IOC on the F-15 occurred September 25, 1991. On January 13, 1992 the first F-16 unit established Full Operational Capability (FOC). A follow-up DAB Program Review, held April 23, 1992, approved full rate production for the FY93 procurement.

In support of the United Nations an AMRAAM downed an Iraqi Air Force MIG under combat conditions in December 1992 and another in January 1993.

The Lot VII contracts, awarded to Hughes Missile System Corporation (HMSC) and Raytheon in February 1993, saw a unit cost decrease of 25 percent. The FY94 Amended President's Budget reduced the procurement objective from 15,450 to 13,038 and stretched the program three years from FY99 to FY02 (Lot XVI). The AF Follow-on Operational Test and Evaluation (FOT&E) Phase 1 program completed in April 1993 and the Navy declared IOC in September 1993.

In January 1994 the Lot VIII missile contracts, awarded to HMSC and Raytheon, reflected a unit cost decrease of 23 percent. The FY95 President's Budget stretched the program three years from FY02 to FY05 (Lot XIX), retaining a procurement objective of 13,038 missiles.

In February 1994 an AMRAAM shot down an aircraft in a combat situation in Bosnia.

Successful completion of the Navy Operational Evaluation occurred in March 1994. In June 1994 Marvin Engineering Company won the Lot VII MRL contract and HMSC received the P3I Phase 2 contract. HMSC obtained, in December 1994, a contract to deliver 1,413 MRLs undelivered by bankrupt United Telecontrol Electronics. The AMRAAM procurement objective decreased from 13,038 to 12,018 and the program was stretched two years from FY05 to FY07 (Lot XXI).

b. (U) Significant Developments Since Last Report --

The U.S. AMRAAM procurement objective decreased from 12,018 to 11,019 and the Foreign Military Sales signed cases have increased to 2,276 missiles. The AMRAAM Lot IX contract was awarded on 7 Mar 95. This marked the fourth consecutive year competitive contracts to HMSC and Raytheon have resulted in lower unit prices. Even though Lot IX procured 200 fewer missiles than Lot VIII, average missile hardware unit cost decreased by 9 percent. The appropriations conference rescinded the remaining \$39.5M of Air Force FY95 procurement funds,

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AMRAAM (AIM-120), December 31, 1995

7b. (U) Program Highlights (Cont'd):

which were being withheld by the Office of the Secretary of Defense (Comptroller) because of disagreements over the Joint Service "buy-to-budget" strategy. This equates to a loss of approximately 180 additional missiles for the Air Force.

The program manager proactively chartered an Independent Review Team (IRT) to investigate an apparent trend, because of seven failures of forty-seven missile launches during Feb-Apr 95. The IRT consisted of experts from both services, the prime contractor, and independent consultants. The team found no systemic problems or apparent degradation in missile reliability. The Final F3I Phase 1 flight test was completed in April 1995.

The program office opened the door for a future Tri-Service AMRAAM program by placing AMRAAM on the Hawk launcher to enhance the Army's current Air Defense System. This versatile capability for the AMRAAM was confirmed in the SAFE-Air 95 demonstration held at FT Greely, Alaska where the system scored two direct hits with live warhead shots. This is an example of significant advances in mission capability through the creative use of off-the-shelf systems.

Acquisition reform efforts began in June 1995 with an internal Joint Systems Program Office team established to reshape acquisition strategies. Areas of opportunity were identified and the following streamlining accomplishments were obtained: Restructured organizationally to streamline and reduce overhead; implemented internal reward program for streamlining; consigned and streamlined tasks to Warner Robbins-Air Logistic Center-Integrated Weapon Systems Management; cut man-years in 1994-95; Contract Data Requirements Lists reduced over 50 percent; reduced source selection paper submittal, evaluation team and required data by 50 percent; teamed with Air Force Development Test Center for all program testing; invoked a streamlined 10 year bumper-to-bumper warranty for expected savings of \$67M; and increased contractor guaranteed missile reliability from 450 to 700 hours mean time between failure.

The AMRAAM Production Reliability Acceptance Test program successfully identified a faulty missile component (a potentiometer in the guidance section), which was aggressively worked by the JSPO. Approximately 271 out of 5000 AMRAAMs affected will be retrofitted. The anomaly proved to be transparent to the operations community, as fielded missiles retained their full operational capability and there are no safety of flight issues related to this action. The contractor is repairing these missiles at no cost to the government.

In December 1995, the Warhead Replacement Tactical Telemetry (WRTTM) flight test was successfully completed and deliveries started in January 1996.

On 4 December 1995, the Navy announced its intentions to discontinue efforts to integrate AMRAAM on the F-14D because of F-14D contract cancellations.

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7b. (U) Program Highlights (Cont'd):

AMRAAM satisfies all current mission requirements.

c. (U) Changes Since As Of Date --

The Lot X AMRAAM missile award was made on 29 Jan 96. The competitive contracts to HMSC and Raytheon resulted in lower unit prices for the fifth straight year, 4.5 percent this year.

8. (U) Threshold Breaches:

There are no breaches to the approved DAE Acquisition Program Baseline (AFB) dated March 18, 1994, and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Production Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	NOV 78	NOV 78	NOV 78
Milestone II (DSARC)	SEP 82	SEP 82	SEP 82
Start DT&E/IOT&E	OCT 83	N/A	OCT 83
Certification	FEB 86	FEB 86	FEB 86
Milestone IIIA (DAB)	JUN 87	JUN 87	JUN 87
DAE Program Review	MAY 88	MAY 88	MAY 88
Start Production Deliveries	SEP 88	SEP 88	SEP 88
Complete D/IOT&E (Air Force)	JAN 89	JAN 89	JAN 89
Complete IOT&E/Captive Carry	JUN 90	JUN 90	JUN 90
Reliability Program w/Lot 1 Assets (Air Force)			
Initial Equippage	DEC 90	DEC 90	DEC 90
Initial Operational Capability (IOC) Air Force	MAR 91	MAR 91	SEP 91
Milestone IIIB (DAB) (Lot IV Full Go-Ahead Rate Production)	APR 91	APR 91	MAY 91
DAB Program Review Full Rate Production Approval	MAR 92	MAR 92	APR 92
Full Operational Capability (FOC) 1st F-16 Unit Fully Operational w/AMRAAMs	MAR 92	MAR 92	JAN 92
Complete FOT&E (OPEVAL) (Navy)	MAR 92	JAN 94	MAR 94
Complete AF FOT&E Phase I	MAR 92	FEB 93	APR 93
P3I Phase 1 CDR Complete	OCT 92	OCT 92	JAN 93
Initial Operational Capability (IOC) (Navy)	SEP 92	SEP 93	SEP 93
Joint Depot Activated	SEP 94	FEB 98	FEB 98
P3I Phase 1 Flight Test Completed	DEC 94	DEC 94	APR 95

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

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Last Delivery	SEP 01	N/A	NOV 09

b. (U) Previous Change Explanations --

AF IOC was delayed from March 1991 to September 1991 because of availability of a fully operational F-15 radar computer tape. DAB IIIB slipped from April 1991 to May 1991 due to rescheduling. FOC occurred in January 1992, two months early due to changes in the deployment schedule. Navy OPEVAL slipped from March 1992 to December 1992 and then to August 1993 because of problems with the F/A-18 radar tape. Navy OPEVAL slipped again from August 1993 to March 1994 because of test failures at Point Mugu Test Center, CA and Holloman AFB, NM. AF FOT&E Phase I slipped from March 1992 to February 1993 due to launcher design changes. AF FOT&E slipped from February 1993 to April 1993 because of higher priority test requirements. An administrative change slipped P3I Phase 1 CDR from October 1992 to November 1992 and slipped again to January 1993 because of software design problems. Navy IOC slipped from September 1992 to December 1992 due to launcher design changes. Navy IOC was declared in September 1993 rather than December 1992 because of its dependency upon Navy OPEVAL. The Joint Depot Activation date slipped from September 1994 to January 1998 because of competition for depot development and the relocation of the depot from Alameda NAS, CA to Letterkenny Army Depot, PA. An administrative change moved depot activation from January 1998 to February 1998. The FY94 President's Budget stretched the program three years. The FY95 President's Budget stretched the program an additional three years. This resulted in the last delivery milestone moving from September 2001 to September 2004 and then to November 2007. Last delivery milestone was deleted from the APB in the September 13, 1993 APB and the current estimate is presented for information. P3I Phase 1 Final Flight test completion date slipped from December 1994 to April 1995 due to drone failures and higher priorities in delivering AIM-120B software. Current estimate for last delivery was changed from November 2007 to November 2009 due to a two year schedule stretch.

c. (U) Current Change Explanations --

No changes since December 1994 Selected Acquisition report submission.

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

d. (U) References --

(U) Production Estimate:
DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated March 18, 1994.

10. (U) Performance Characteristics:

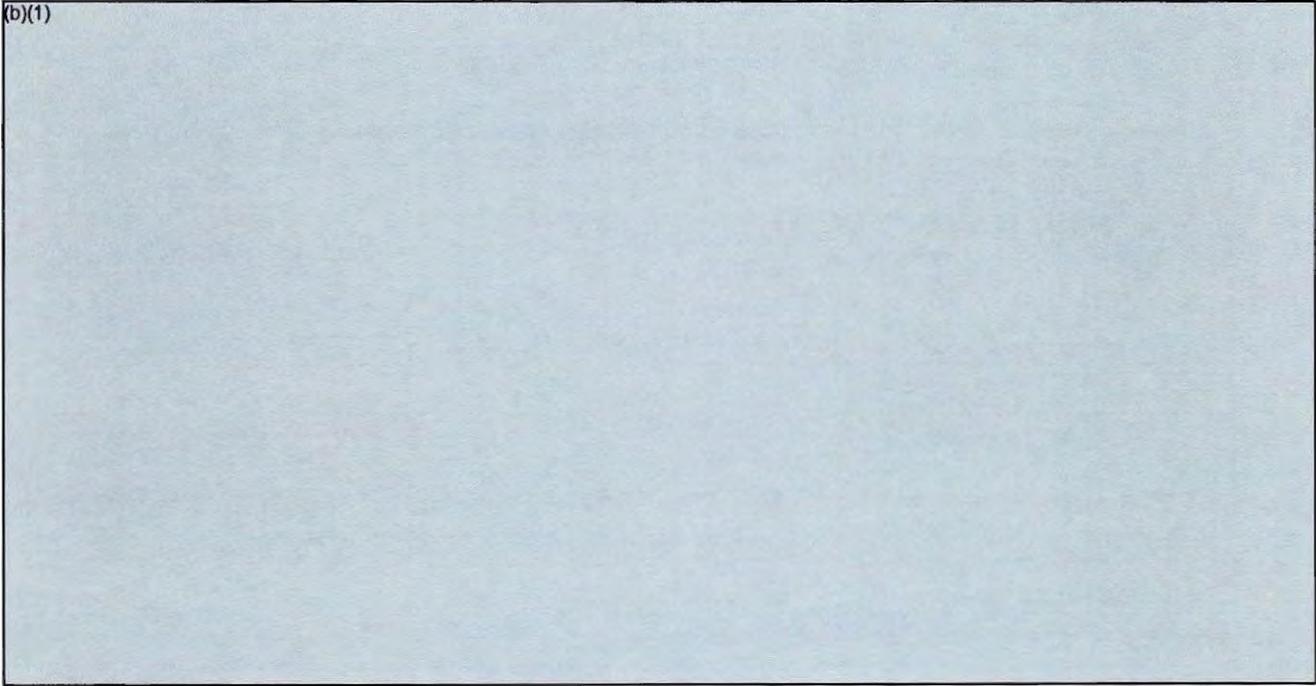
a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
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Reliability					
Ready Storage (hrs) (mature msl - 90K operational flight hours)	60000	60000 / 45000	N/A	45000	
Availability (%)	86	86 / 82	N/A	96	
Captive-Carry (MBTM- Type I) (hrs)	600	600 / 450	282	750	
On Alert Storage MTBM Aircraft Configure/ Load - 3 Man Load Crew	30000	30000 / 22500	N/A	30000	
Install 4 Rail Launchers (mins)	20	20 / 25	21	21	
Load 4 Missiles from trailer (mins)	15	15 / 20	18	18	
Load 4 Missiles from container (mins)	20	20 / 30	22	22	
Missile checks (mins)	1	1 / 5	1	1	

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

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
All Weather Capability	Day, Night, Rain,	Day, Night, Rain,	/ Day, Night, Rain,	Day, Night, Rain,	
(b)(1)					
Aircraft Compatibility	F-15, F-16, F-14, F/A-18	F15, F-16, F-14, F/A-18	/ F-15, F-16, F-14, F/A-18	F-15, F-16, F-14, F/A-18	
All-Dp Round	Control Surfaces field instal-	Control Surfaces field in-	/ Control Surfaces field in-	Control Surfaces field in-	



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

PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Target			
Discrimination (cluster target):			
Attack Multiple Targets which are unresolved by friendly fighter			

(b)(1)

Demonstrated captive carry Mean Time Between Maintenance (MTBM) hours in Production Reliability Acceptance Test (PRAT).

F-Pole - The distance between the shooter and the target when the missile intercepts the target.

A-Pole - The distance between the shooter and the target when the missile goes active.

b. (U) Previous Change Explanations --

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 an MTBM of 118 hours, based on 1764 flying hours. Missile weight increased due to a change in materials. The Pk continues to improve. Availability or operational reliability increased from 93% to 96% because of increase in MTBM. Captive Carry Reliability measured in ACC-conducted tests exceeded 2255 hrs MTBM on the F-16 and exceeded 1333 MTBM on the F-15. Production reliability exceeds 750 hrs MTBM for both Hughes and Raytheon.

c. (U) Current Change Explanations --

No changes since December 1994 Selected Acquisition Report submission.

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

d. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 18, 1994.

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

	Production Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1725.7	2097.2	2158.8
Procurement	10552.5	10205.7	8770.5
Flyaway	(10038.5)		(8254.6)
Other Weapon Cost	(378.0)		(0.0)
Peculiar Support	(0.0)		(385.8)
Initial Spares	(136.0)		(130.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 92 Base-Year \$	12278.2	12302.9	10929.3
Escalation	834.2	1025.0	458.7
Development (RDT&E)	(-375.1)	(-275.7)	(-267.0)
Procurement	(1209.3)	(1300.7)	(725.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	13112.4	13327.9	11388.0

Note: Other Weapon Cost has been recategorized as Peculiar Support to track to the program office estimate.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	15450	13038	11019
Total	15450	13038	11019

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

c. Foreign Military Sales/International Cooperative Programs --

(U) TURKEY (TK-D-YDO) Case signed May 1991

\$59.3M PURPOSE: 96 AMRAAMs (Lots VII,VIII), 96 Missile Rail Launchers (MRLs) and associated equipment

(U) SOUTH KOREA (KS-D-YGL) Case signed October 1991

~~SECRET~~

AMRAAM (AIM-120), December 31, 1995

(b)(1)

- (U) NATO EUROPEAN FIGHTER MANAGEMENT AGENCY (NEFMA) (MI-D-YAA)
Case signed November 1991
\$7.4M PURPOSE: 6 AMRAAMs (Lot VII)
- (U) UNITED KINGDOM (UK-D-YDR) Case signed March 1992
\$104.9M PURPOSE: 210 AMRAAMs (Lots VII,VIII) and support
- (U) NORWAY (NO-D-YCY) Case signed 7 October 1992
\$60.0M PURPOSE: 100 AMRAAMs (Lots VIII,IX), 132 MRLs, 22
Captive Air Training Missiles (CATMs), and support equipment
- (U) TURKEY (TK-D-YDS) Case signed 17 December 1992
\$12.4M PURPOSE: 20 AMRAAMs (Lot VIII)
- (U) TURKEY (TK-D-YDT) Case signed 25 October 1993
\$21.7M PURPOSE: 60 AMRAAMs (Lot IX)
- (U) SOUTH KOREA (KS-D-YGN) Case signed 27 December 1993
\$127.5M PURPOSE: 190 AMRAAMs (Lot IX) and support

(b)(1)

- (U) NORWAY (NO-D-YCZ) Case signed 31 August 1994
\$88.4M PURPOSE: 228 AMRAAMs (Lots IX,X)
- (U) SWEDEN (SW-D-YCC) Case signed 1 September 1994
\$2.6M PURPOSE: 7 AMRAAMs (Lots X) and support. Missile
procurement will be FMS administered direct commercial sales
- (U) SWEDEN (SW-D-YCD) Case signed 1 September 1994
\$26.7M PURPOSE: 100 AMRAAMs (Lot X) and support. Missile
procurement will be FMS administered direct commercial sales
- (U) FINLAND (FI-P-YAA) Case signed 4 November 1994
\$144.2M PURPOSE: 240 AMRAAMs (Lots X,XI,XII). Missile
procurement will be FMS administered direct commercial sales and
support
- (U) DENMARK (DE-D-YAS) Case signed 8 December 1994
\$63.1M PURPOSE: 150 AMRAAMs (Lot IX,X) and support
- (U) TURKEY (TK-D-YDT) Case signed 13 December 1994

~~SECRET~~

AMRAAM (AIM-120), December 31, 1995

(b)(1)

- (U) GERMANY (GY-D-YEK) Case signed 28 June 1995
\$47.4M PURPOSE: 96 AMRAAM (Lot VII,X) and support
- (U) GREECE (GR-D-YDR) Case signed 30 June 1995
\$43.2M PURPOSE: 100 AMRAAM (Lot X) and support
- (U) NETHERLANDS (NE-D-YME) Case signed 29 September 1995
\$92.8M PURPOSE: 200 AMRAAM (Lot X,XI) and support
- (U) BELGIUM (BE-D-YDR) Case signed 29 December 1995
\$30.2M PURPOSE: 28 AMRAAM (Lot XI)

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DAE Approved Acquisition Program Baseline dated January 17, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated March 18, 1994.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (MAR 94 AFB)	Percent Change
a. (U) Total Program			
(1) Cost (BY92\$)	10929.3	12302.9	
(2) Quantity	11019	13038	
(3) Unit Cost	0.992	0.944	5.11
b. (U) Procurement			
(1) Cost (BY92\$)	8770.5	10205.7	
(2) Quantity	11019	13038	
(3) Unit Cost	0.796	0.783	1.68

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AMRAAM (AIM-120), December 31, 1995

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1350.6	11761.8	0.0	13112.4
Previous Changes:				
Economic	+3.4	-136.9	-	-133.5
Quantity	-	-1949.1	-	-1949.1
Schedule	-18.3	+1726.9	-	+1708.6
Engineering	+440.0	+85.3	-	+525.3
Estimating	+130.8	-890.8	-	-760.0
Other	-	-	-	-
Support	-	+67.9	-	+67.9
Subtotal	+555.9	-1096.7	-	-540.8
Current Changes:				
Economic	-32.3	-261.8	-	-294.1
Quantity	-	-958.2	-	-958.2
Schedule	-	66.2	-	+66.2
Engineering	-	23.1	-	+23.1
Estimating	17.6	-28.8	-	-11.2
Other	-	-	-	-
Support	-	-9.4	-	-9.4
Subtotal	-14.7	-1168.9	-	-1183.6
Total Changes	+541.2	-2265.6	-	-1724.4
Current Estimate	1891.8	9496.2	-	11388.0

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ANRAAM (AIM-120), December 31, 1995

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

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	1725.7	10552.5	0.0	12278.2
Previous Changes:				
Quantity	-	-1298.3	-	-1298.3
Schedule	-16.8	+789.9	-	+773.1
Engineering	+357.2	+52.2	-	+409.4
Estimating	+79.9	-691.0	-	-611.1
Other	-	-	-	-
Support	-	+14.8	-	+14.8
Subtotal	+420.3	-1132.4	-	-712.1
Current Changes:				
Quantity	-	-628.6	-	-628.6
Schedule	-	-	-	-
Engineering	-	19.5	-	+19.5
Estimating	12.8	-27.6	-	-14.8
Other	-	-	-	-
Support	-	-12.9	-	-12.9
Subtotal	+12.8	-649.6	-	-636.8
Total Changes	+433.1	-1782.0	-	-1348.9
Current Estimate	2158.8	8770.5	-	10929.3

b. (U) Previous Change Explanations --

RDT&E

- Economic: Revised economic indices.
Economic Adjustment for negative program change.
- Schedule: Reduced funding in FY94 slipped P3I Phase 2 and 3 schedules.
- Engineering: Added funds for ECM updates and lethality improvements.
Added funds for further P3I technical definition.
- Estimating: Adjusted current and prior years inflation.
Increased funds for PSD contract overruns.
Reduced P3I Phase 2 funds for propulsion contracts in Navy programs.
Funded core Navy infrastructures in support of all

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AMRAAM (AIM-120), December 31, 1995

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

P3I efforts.

Delayed contract award for P3I Phase 2 causing Air Force to realign FY94-FY97 funds to FY98.

Increased funds required for the revised P3I Phase 3 roadmap FY98-FY03.

Added new estimate for P3I efforts in FY02-FY07.

Procurement

Economic:

Revised economic escalation indices.

Adjusted for negative program change.

Quantity:

Reduced program from 15,450 to 13,038 units (decrease of 2,412 units).

Reduced program from 13,038 to 12,018 units (decrease of 1,020 units).

Schedule:

Reduced annual procurement profiles in the FY92 budget (extending program one year to FY02), in the FY94 budget (extending the program three years to FY05), and in the FY95 budget (extending the program two years to FY07).

Engineering:

Added non-recurring engineering costs to implement P3I improvements.

Increased funds for the Value Engineering (VE) program and Electronic Safe and Arm Device (ESAD).

Reduced the ESAD and AMRAAM Producibility Enhancement Program (APREP) projects.

Estimating:

Adjusted current and prior years inflation.

Added technical support requirements from Raytheon and extended engineering and testing.

Increased contractor overhead rates.

Delayed implementing value engineering changes.

Removed Defense Business Operations Fund.

Decreased estimate to accompany the decrease of 2,412 units.

Increased fixed costs associated with the program stretch to FY05 and allocated contractor fixed costs over reduced quantities.

Adjusted Lots I and II contracts overrun.

Revised estimate based on projecting aggressive Lot VIII competitive prices.

Reduced costs based on changes in FMS quantities.

Revised estimating methodology for production test and re-estimated production support.

Revised P3I implementation estimate due to Lot VIII award.

Reduced special test equipment (STE) and other cost categories in out years due to actuals.

Decreased estimate to accompany the decrease of 1,020 units.

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AMRAAM (AIM-120), December 31, 1995

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

Adjusted for prior year actuals.
 Decreased estimate due to increased FME quantities.
 Revised estimate due to Lot VIII competition.
 Deleted ADA software requirements as a result of cost benefit analysis showing cost as prohibitive.
 Reduced production support because of reduction on government fixed costs.
 Decreased P3I implementation due to contract actuals.
 Increased rate impact caused by decreases in quantity.

Support: Added Interim Contractor Support (ICS) previously funded in Operations and Maintenance (OM).
 Adjusted current and prior years inflation.
 Decreased initial spares requirements.
 Decreased other weapon system requirements.
 Added spares required for program stretches.
 Increased Navy PSE and logistics.
 Added Common Field Level Memory Reprogramming Equipment (CFMRE).
 Decreased depot and training equipment.
 Increased spares required for program stretch from FY05 to FY07.
 Added peculiar support equipment in FY01-FY02 for logistics requirements.

c. (U) Current Change Explanations --

(Dollars in Millions)
 Base-Year Then-Year

(1) RDT&E

ECONOMIC CHANGES

Revised escalation indices. (Economic)	N/A	-32.3
--	-----	-------

ESTIMATING CHANGES

Adjustment for Current and Prior Year Inflation. (Estimating)	+2.7	+2.9
Revised estimate for Propulsion Enhancement Program (+5" Rocket Motor). (Estimating)	-1.4	-1.5
Realignment of P3I Phase 2 test program. (Estimating)	-1.9	-2.0
Realignment of RDT&E funds due to actuals. (Estimating)	-0.4	--
Reduced estimate for test support costs. (Estimating)	+0.3	+0.4

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AMRAAM (AIM-120), December 31, 1995

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Increased funds for P3I Phase 3. (Estimating)	+13.5	+17.8
EDT&E Subtotal	+12.8	-14.7
(2) Procurement		
ECONOMIC CHANGES		
Revised escalation indices. (Economic)	N/A	-385.7
Economic adjustment for negative program change. (Economic)	N/A	+123.9
QUANTITY CHANGES		
Quantity variance associated with decreasing the program from 12,018 to 11,019 (decrease of 999 units). (Quantity)	-628.6	-958.2
SCHEDULE CHANGES		
Acceleration/Stretchout of annual procurement buy profile. (Schedule)	--	+66.2
ENGINEERING CHANGES		
Reduced AMRAAM Producibility Enhancement Program (APREP) projects. (Engineering)	-14.4	-16.2
Added AMRAAM Anti-Tamper (AMAT) program. (Engineering)	+18.1	+20.4
Added telemetry upgrade. (Engineering)	+15.8	+18.9
ESTIMATING CHANGES		
Allocation to Estimating as a result of quantity decrease. (Estimating)	+266.1	+401.7
Adjustment for current and prior year inflation. (Estimating)	+39.1	+48.9
Decreased engineering/logistics support costs due to quantity decrease. (Estimating)	-43.8	-54.5
Adjusted for prior year actuals. (Estimating)	+4.4	+5.1
Decrease due to Lot IX competition. (Estimating)	-42.5	-56.6
Decreased estimate due to increased FMS quantities. (Estimating)	-245.7	-366.6

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AMRAAM (ADM-120), December 31, 1995

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Reestimated AMRAAM Joint Service Depot (AJSD). (Estimating)	-5.2	-6.8
SUPPORT CHANGES		
Adjustment for Current and Prior Inflation. (Support)	+3.7	+3.9
Decrease in Initial Spares due to a decrease in quantity. (Support)	-9.5	-10.1
Decrease in Peculiar Support Equipment due to a decrease in quantity. (Support)	-7.1	-3.2
Procurement Subtotal	-649.6	-1168.9

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.476	-0.058	0.143	0.121	0.019	0.188	--	-0.040	0.373	0.849

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.849	-0.039	0.077	0.161	0.050	-0.070	--	0.005	0.184	1.033

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

a. (U) RDT&E -- (U) HUGHES P3I PHASE 2: HUGHES MISSILE SYSTEM CO., TUCSON, AZ F08626-93-C-0044, CPAF/CPFF Award: June 30, 1994 Definitized: June 30, 1994	Initial Contract Price		
	Target	Ceiling	Qty
	\$89.6	N/A	0

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

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$103.5	N/A	0	\$91.9	\$98.4
Previous Cumulative Variances			Cost Variance	Schedule Variance
			\$0.5	\$-0.9
Cumulative Variances To Date (01/31/96)			\$0.5	\$-1.1
Net Change			\$0.0	\$-0.2

Explanation of Change:

The net change in current target price from initial contract target price is due to the award of the +5th Rocket Motor contract, period one award fee, and the exercise of options.

The schedule variance is due to delayed test activities, rescheduling of work packages, and technical difficulties.

The Program Manager's estimate at completion assumes a 97 percent efficiency for the remainder of the contract, while the contractor assumes a 109 percent efficiency for the remainder of the contract.

b. (U) Procurement -- (U) HUGHES LOTS VII/VIII: HUGHES AIRCRAFT COMPANY, TUCSON, AZ F08626-93-C-0007, FFP Award: February 22, 1993 Definitized: February 22, 1993	Initial Contract Price		
	Target	Ceiling	Qty
	\$333.2	N/A	849

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$612.5	N/A	1362	\$612.5	\$612.5

Explanation of Change:

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

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

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

			Initial Contract Price	
(U) RAYTHEON LOTS VII/VIII:			Target	Ceiling
RAYTHEON COMPANY, BEDFORD, MA				
FO8626-93-C-0008, FFP			\$294.3	N/A
Award: February 22, 1993				
Definitized: February 22, 1993				
			Qty	
				614
Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$542.8	N/A	1383	\$542.8	\$542.8

Explanation of Change:

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

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

			Initial Contract Price	
(U) HUGHES LOTS IX/X:			Target	Ceiling
HUGHES AIRCRAFT COMPANY, TUCSON, AZ				
FO8626-94-C-0029, FFP			\$129.0	N/A
Award: March 7, 1995				
Definitized: March 7, 1995				
			Qty	
				456
Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$288.3	N/A	1130	\$288.3	\$288.3

Explanation of Change:

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

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

This is the first time this contract is reported in the SAR.

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

(U) RAYTHEON LOTS IX/X: RAYTHEON COMPANY, BEDFORD, MA F08626-94-C-0030, FFP Award: March 7, 1995 Definitized: March 7, 1995			Initial Contract Price		
			Target	Ceiling	Qty
			\$141.8	N/A	604
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$309.9	N/A	1227	\$309.9	\$309.9	

Explanation of Change:

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

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

This is the first time this contract is reported in the SAR.

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

a. (U) Program Status --

- (1) Percent Program Completed: 64.5% (20 yrs/31 yrs)
- (2) Percent Program Cost Appropriated: 70.5% (\$8032.8 / \$11388.0)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY77-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2007)	Total
RDT&E	1389.7	49.2	28.2	424.7	1891.8
Procurement	6337.7	256.2	158.8	2743.5	9496.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	7727.4	305.4	187.0	3168.2	11388.0

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

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (\$)
		Nonrec	Rec		Program	Obligated	Expended	

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

1978				11.9	6.0	6.0	6.0	6.8
1979				33.5	18.3	18.3	18.3	8.4
1980				45.0	27.3	27.3	27.3	9.4
1981				36.0	24.2	24.2	24.2	11.9
1982				4.6	3.3	3.3	3.3	9.2
1983				5.7	4.3	4.3	4.3	4.9
1984				9.3	7.3	7.3	7.3	3.8
1985				9.7	7.8	7.8	7.8	3.4
1986				5.1	4.2	4.2	4.2	2.8
1987				5.8	5.0	5.0	5.0	2.7
1988				25.1	22.3	22.3	22.2	3.0
1989				13.3	12.4	12.4	12.4	4.2
1990				7.2	6.9	6.9	6.9	4.0
1991				3.5	3.5	3.5	3.5	4.3
1992				2.4	2.5	2.5	2.5	2.8
1993				3.0	3.1	3.0	3.0	2.7
1994								2.0

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1995				14.5	15.7	7.6	2.8	2.0
1996				3.9	4.3	1.3	0.4	2.1
1997				2.0	2.3			2.2
1998				5.0	5.8			2.2
1999				4.1	4.8			2.3
2000				3.8	4.6			2.2
2001				3.6	4.4			2.2
Subtot				258.0	200.3	167.2	161.4	

Appropriation: 1507 Weapons Procurement, Navy

1989	26	3.8	26.2	32.5	32.0	32.0	32.0	4.2
1990	85	18.6	61.4	84.8	85.1	85.1	81.5	4.0
1991	300	48.9	185.4	251.3	259.6	259.6	236.8	4.3
1992	191	37.3	109.9	186.9	195.5	173.8	135.4	2.8
1993	165	19.0	67.8	98.4	105.1	101.7	55.6	2.7
1994	75	21.7	24.4	54.0	58.9	55.6	38.0	2.0
1995	106	20.5	38.4	67.9	75.0	63.3	20.4	1.9
1996	115	22.4	30.2	66.3	74.8	50.5	1.7	2.1

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AMRAAM (AIM-120), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1997	37	13.4	11.6	33.3	38.4			2.2
1998	84	16.8	27.7	53.8	63.4			2.2
1999	82	18.6	27.0	53.8	64.8			2.3
2000	84	18.9	27.2	53.7	66.2			2.2
2001	80	17.9	26.2	50.9	64.1			2.2
2002	80	16.0	27.7	50.9	65.5			2.2
2003	80	14.3	27.9	49.7	65.3			2.2
2004	207	15.2	81.3	102.8	138.1			2.2
2005	207	15.3	82.1	103.6	142.3			2.2
2006	207	15.5	82.7	104.4	146.5			2.2
2007	208	15.6	83.7	131.4	188.4			2.2
Subtot	2419	369.7	1048.8	1630.4	1929.0	821.6	601.4	
Navy	2419	369.7	1048.8	1888.4	2129.3	988.8	762.8	

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

1977				10.3	4.8	4.8	4.8	7.5
1978				13.2	6.7	6.7	6.7	6.0
1979				29.5	16.1	16.1	16.1	8.4

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AMRAAM (AIM-120), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Than-Year \$			Encl Rate (%)
		Honrec	Rec		Program	Obligated	Ex-panded	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1980				43.2	26.2	26.2	26.2	9.4
1981				34.1	22.9	22.9	22.9	11.9
1982				192.1	137.9	137.9	137.9	9.2
1983				283.1	212.9	212.9	212.9	4.9
1984				252.6	197.3	197.3	196.4	3.8
1985				256.0	206.6	206.6	206.0	3.4
1986				110.2	91.1	91.1	85.0	2.8
1987				43.6	37.7	33.5	31.8	2.7
1988				30.1	26.7	26.6	23.6	3.0
1989								4.2
1990				12.4	11.9	11.9	11.9	4.0
1991				18.0	17.9	17.9	17.8	4.3
1992				29.6	30.3	30.3	30.3	2.8
1993				37.2	38.9	38.8	38.7	2.7
1994				61.8	65.8	64.8	55.6	2.0
1995				58.9	63.9	62.0	17.6	1.9
1996				40.5	44.9	6.1	0.6	2.0
1997				22.9	25.9			2.2

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AMRAM (AIM-120), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1998				64.9	75.1			2.3
1999				33.2	39.3			2.2
2000				33.5	40.5			2.2
2001				33.3	41.1			2.2
2002				25.6	32.3			2.2
2003				25.8	33.3			2.2
2004				26.0	34.3			2.2
2005				26.2	35.3			2.2
2006				26.4	36.4			2.2
2007				26.6	37.5			2.2
Subtot				1900.8	1691.5	1214.4	1142.8	

Appropriation: 3020 Missile Procurement, Air Force

1984		34.2	1.9	36.1	29.3	29.3	29.3	8.0
1985		84.0	4.9	88.8	74.1	74.1	74.1	3.4
1986		164.0	58.0	226.7	197.9	197.9	197.9	2.8
1987	180	205.5	427.0	635.1	596.1	596.1	596.1	2.7
1988	400	216.4	521.0	753.5	711.3	704.0	702.0	3.0

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AMRAAM (AIM-120), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1989	874	109.8	677.5	803.9	791.8	786.9	785.6	4.2
1990	803	88.1	574.5	680.6	682.6	677.6	666.9	4.0
1991	600	184.1	384.7	592.3	611.8	559.6	553.0	4.3
1992	700	70.0	419.6	506.9	530.2	527.7	509.0	2.8
1993	1000	131.8	409.0	569.5	608.2	588.1	523.0	2.7
1994	983	86.3	314.4	416.8	454.7	445.4	163.4	2.0
1995	412	68.7	116.7	216.0	238.5	217.0	42.7	1.9
1996	291	68.9	79.1	160.8	181.4	129.3	0.3	2.0
1997	133	46.8	47.5	104.4	120.4			2.2
1998	158	49.7	59.3	119.0	140.3			2.3
1999	173	41.8	60.8	110.1	132.7			2.2
2000	227	41.6	77.0	130.1	160.3			2.2
2001	228	42.6	88.5	145.9	183.7			2.2
2002	228	33.3	82.9	123.3	158.6			2.2
2003	228	34.5	83.5	125.2	164.6			2.2
2004	245	32.4	101.6	141.2	189.8			2.2
2005	245	33.6	103.0	143.8	197.4			2.2
2006	246	32.4	104.3	143.9	201.9			2.2

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AMRAAM (AIM-120), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2007	246	33.6	105.3	146.2	209.6			2.2
Subtot	8600	1934.1	4902.0	7140.1	7567.2	5533.0	4843.3	
USAF	8600	1934.1	4902.0	9040.9	9258.7	6747.4	5986.1	
Grand Total	11019	2303.8	5950.8	10929.3	11388.0	7736.2	6748.9	

Summary does not include funding or quantities for Seek Eagle procurements of 12 AMRAAMs in FY90, 24 AMRAAMs in FY94, and 18 Captive Air Training Missiles (CATMs) in FY95.

The recurring flyaway in FYs 84 - 86 is for 15 missiles in the Raytheon qualification lot and are not considered fully configured end items.

Funding reflects OSD approved inflation indices dated February 28, 1996.

Expenditures and obligations reflect program office records as of March 8, 1996.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		Plan/Actual
	RDT&E	111/111
	Procurement	5116/5075

Hughes and Raytheon are behind schedule in missile deliveries by 1 and 40 missiles, respectively.

AMRAAM (AIM-120), December 31, 1995

17b. (U) Production Rate Data (Cont'd):

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development Estimate	Current Estimate	Latest Approved Threshold
● Qty 15450 - ● Peak Rate: 125.0/mo			
FY 92 Base-Year \$	326.100	640.700	640.700
Then Year \$	373.000	723.500	723.500
● Qty 1468 (1st three years) - ● Peak Rate: 75.0/mo			
FY 92 Base-Year \$	710.700	1681.800	1681.800
Then Year \$	618.000	1576.800	1576.800

Dollars in Thousands

Development Estimate reflects a total 24,320 quantity/10 year program at a maximum rate of 250/month. The first three years contained 3640 missiles at a maximum rate of 200/month.

This section requires no update after Milestone III.

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, AF or Navy, will be returned to a Naval Weapons Station (NWS) for failure confirmation and isolation to the failed missile section. Defective sections will be returned to the AMRAAM depot for repair.

The O&S costs are the direct costs for the tactical missile and the Load Trainer/Captive Carry Missile (LT/CCM) associated with operating, supporting, and maintaining the AMRAAM missile over a 20 year deployment phase starting in FY91 for the AF and FY92 for the Navy. The AF estimate covers base operations including Load Trainer/Captive Carry Missile (LT/CCM), AUR fault verification, operational firings, depot repairs (seven year ICS), supply/item management, transportation, replenishment spares, and field software updates. The Navy estimate includes AMRAAM fleet operations and

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

support, intermediate maintenance at NWS, depot rework (five years ICS), technical support (fleet support, engineering services, quality surveillance, program management), supply support, replenishment spares, and contractor augmented support.

The O&S cost estimate was updated December 1995.

There are no antecedent systems; the AMRAAM is designed to augment the AIM-7 Sparrow.

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

Cost Element	AMRAAM Average Annual Cost Per Year	Antecedent Average Annual Cost Per Year
1.0 Mission Personnel	2.0	N/A
2.0 Unit-IVL Consumption	12.8	N/A
3.0 Inter Maintenance	0.3	N/A
4.0 Depot Maintenance	8.8	N/A
5.0 Contractor Support	0.0	N/A
6.0 Sustaining Support	15.0	N/A
7.0 Indirect Support	0.1	N/A
Total	39.0	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M (USAF)	4.5	---	---	---	4.5
Industrial Fund	---	---	---	---	---
Total	4.5	---	---	---	4.5

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SELECTED ACQUISITION REPORT (RGS:DD-COMP(O&A)823)
PROGRAM: SH-60R

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
SH-60R Multi-Mission Helicopter Upgrade

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
Air ASW, and Special Mission Progra CAPT Larrie Cable
(PMA-299) JP-1, Rm 720 Assigned: May 25, 1995
Washington, DC 20361-1299 AV 664-2686 COMM 703-604-2686

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

RDT&E:
PE 0604212N Project H0485, H1707
PROCUREMENT:
APFN 1506 ICN 018200 (Navy)

5. (U) Related Programs:
Airborne Low Frequency Sonar (ALFS)

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6. (U) Mission and Description:

The Multi-Mission Helicopter Upgrade (formally called LAMPS MK III Block II Upgrade) is a development program which brings critical capability improvements to the SH-60B/F helicopters. The capability improvements are essential to future tactical rotary-wing effectiveness in providing battlegroup protection while achieving coastal littoral battlespace dominance. The Block II Upgrade improves the capability of the LAMPS MK III Weapons System to provide battle group protection and adds significant capability in coastal littoral and regional conflicts. The Block II Upgrade entered Engineering and Manufacturing Development (EMD) in FY93 and represents a major avionics modification to the SH-60B, greatly enhancing both primary mission areas of Anti-Submarine Warfare (ASW) and Anti-Surface Warfare (ASuW). The Airborne Low Frequency Sonar (ALFS) will be added to enhance the existing acoustic suite. ASuW effectiveness will be improved with the addition of a multi-mode radar which includes an inverse synthetic aperture imaging radar mode to permit stand-off classification of hostile threats. An improved Electronic Surveillance Measures (ESM) system will enable passive detection and targeting of radar sources not detectable with the current system. Aircrew and aircraft survivability in hostile environments will be significantly improved through software integration of the self-defense equipments. Provisions for a tactical data transfer system to improve platform interoperability by rapid, secure transfer of mission information between multiple air and surface units is included in the upgrade.

The ALFS program develops a low frequency sonar and increased sonobuoy processing capability for the SH-60 helicopter to maintain and improve undersea warfare mission effectiveness against the quiet submarine threat in both deep and shallow water environments. This project provides a dipping sonar with demonstrated deep water capabilities typically 3 to 6 times greater than the current in-service helicopter sonar (square miles of ocean searched per hour). The ALFS system (designated AN/AQS-22) will be installed in the SH-60R aircraft. ALFS provides longer detection ranges and greater detection capability by using lower frequencies, less signal attenuation, longer pulse lengths, improved processing and increased transmission power. This improvement will significantly increase battle group and independent ship protection providing improved survivability and operating flexibility. The ALFS program will utilize the Enhanced Modular Signal Processor (EMSP), designated UYS-2A, as its acoustic processor. The incorporation of enhanced shallow water detection/classification capability, improvements to the acoustic processor, and onboard acoustic performance predictions represent current developments to meet littoral challenges.

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7. (U) Program Highlights:

a. (U) Significant Historical Developments --

A Tentative Operational Requirement (TOR) for the Block II Upgrade was received in the Naval Air Systems Command (NAVAIRSYSCOM) in May 1986. NAVAIRSYSCOM responded with a Development Options Paper in September of 1986 which listed options for meeting the established requirements and outlined the associated costs. A formal Operational Requirement (OR) for the LAMPS MK III Block II Upgrade was initiated. In April 1987 the Block II OR was revised to include the requirement for dipping sonar. The "Operational Requirements for SH-60B Block II Upgrade" (OR# 209-05-90) was approved in April 1988.

In May of 1988, the RDT&E resource sponsor (OP-03B) was briefed on the upgrade program. The program received approval and commitment for funding support. However, resources available in the FY88 President's Budget were not sufficient to support the Operational Requirement; roughly half of the RDT&E budget required to support development and integration specified in the Operational Requirements.

The OR was again rewritten to respond to the format and requirements of DODINST 5000.2 and include Congressionally directed ESM improvements in 1991. The latest Operational Requirements Document (ORD# 314-03-92) was approved August 3, 1992. The program achieved a MSII decision for entry into EMD in July 1993.

Since December 1990, IBM Federal Sector Division of Owego NY has been under contract to define the air vehicle and mission avionics systems required to meet the Navy's requirements. A structured systems engineering process has been implemented to identify requirements, flow them down into system, subsystem, prime item and critical item specifications, allocate the requirements to hardware and software critical items, perform industry surveys, trade studies, performance analysis, identification of promising technologies, risk identification and mitigation, and cost-benefit analysis of performance criteria. IBM was awarded an EMD contract on August 23, 1993. In addition, IBM has performed competitions for all subsystems whose requirements could not be met by current fielded equipment. IBM Federal Sector Division was subsequently acquired by Loral Federal Systems in March 1994.

An Engineering and Manufacturing (EMD) contract for Airborne Low Frequency Sonar (ALFS) was awarded to the Hughes Aircraft Company in FY91. A system level Critical Design Review (CDR) was completed in FY93 and design verification testing completed at Lake Seneca, NY in FY94. The first two ALFS Engineering Development Models (EDMs) were delivered in FY95, with the system currently in an engineering and manufacturing development phase.

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7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
 A successful System Level Preliminary Design Review (PDR) was completed in November 1995.
 First two ALFS Engineering Development Units delivered in FY 1995.
 Shallow Water Upgrade (SWUG) enhancements were placed on contract on September 29, 1995.
 Commenced ALFS DTIIA testing in November 1995.

This system is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --
 The ALFS Test and Evaluation Master Plan (TEMP) was updated and subsequently signed out of COMOPTEVFOR on February 26, 1996.

8. (U) Threshold Breaches:
 There are no breaches to the Approved Acquisition Program Baseline dated June 19, 1995.
 There are no Numm-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestones II	JUL 93	JUL 93	JUL 93
EMD Contract Award	JUL 93	JUL 93	AUG 93(Ch-1)
Preliminary Design Review	JUL 95	JUL 95	NOV 95(Ch-1)
Critical Design Review	OCT 96	OCT 96	OCT 96
LRIP Contract Award	NOV 98	NOV 98	JAN 99(Ch-2)
LRIP First Delivery	JUL 00	JUL 00	JUL 00
TECHEVAL			
Start	JAN 00	JAN 00	JAN 00
Complete	JUN 00	JUN 00	JUN 00
OPEVAL			
Start	SEP 00	SEP 00	SEP 00
Complete	MAR 01	MAR 01	MAR 01
Milestones III	OCT 01	OCT 01	OCT 01
Airborne Low Frequency Sonar			
EMD Contract Award	JAN 92	JAN 92	JAN 92
Preliminary Design Review	OCT 92	OCT 92	OCT 92
Critical Design Review	APR 93	APR 93	APR 93
TECHEVAL			
Start	FEB 98	FEB 98	FEB 98
Complete	JUN 98	JUN 98	JUN 98

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

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
OPEVAL			
Start	JUL 98	JUL 98	JUL 98
Complete	SEP 98	SEP 98	SEP 98
Milestone III	JAN 99	JAN 99	JAN 99
Production Contract Award	MAR 99	MAR 99	MAR 99
Initial Operating Capability	MAR 01	MAR 01	MAR 01

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

CH-1. EMD Contract Award changed from JUL 93 to AUG 93 and Preliminary Design Review changed from JUL 95 to NOV 95 to reflect actual dates of accomplishments.

CH-2. Changes to Test Plans resulted in the LRIP Contract Award being moved from Nov 98 to Jan 99.

d. (U) References --

(U) Development Estimate:

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 19, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
Maximum Operating Sea State	5	5 / 5	TBD	5
Mission Duration (ASW) (hrs)	5 3.3	3.3 / 2.3	TBD	2.3 (Ch-1)
Mission Duration (ASW) (hrs) Multi-Mode Radar	3.5	3.5 / 3.0	TBD	3.0 (Ch-1)

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				
Airborne Low Frequency Sonar Operating Frequency (Khz)	<5	<5 / <5	TBD	<5

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Maximum System	550	550 / 550	TBD	550	
(b)(1)					
Reeling Machine	1000	1000 / 150	TBD	150	(Ch-1)
MCBCF (cycles)					
Avionics MTBMCf (hrs) (excluding cable and reeling machine)	78	78 / 53	TBD	53	(Ch-1)
MTBF (hrs)	58	58 / 39	TBD	39	(Ch-1)
MTR, O Level (hrs)	2.0	2.0 / 3.8	TBD	3.8	(Ch-1)
Availability (%)	0.98	0.98 / 0.90	TBD	.90	(Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(b)(1)

d. (U) References --

(U) Development Estimate:

FY 1996/1997 President's Budget
ALFS ORD #295-05-92 dated December 1991
Block II ORD #314-03-92 dated August 1992

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 19, 1995.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	508.4	508.4	569.7
Procurement	3512.1	3512.1	3520.0
Airframe/CFE	(2119.0)		(2219.9)
GFE	(435.7)		(326.2)
Nonrecurring flyaway	(150.6)		(106.9)
Total Flyaway	(2705.3)		(2653.0)
Pubs	(40.0)		(47.1)
Weapon System	(5.6)		(6.1)
Field Activities	(165.5)		(168.1)
ILS/LSA/MES	(79.2)		(92.3)
Total Other Wpn Sys	(290.3)		(313.6)
Peculiar Support	(238.9)		(235.6)
Initial Spares	(277.6)		(317.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 93 Base-Year \$	<u>4020.5</u>	<u>4020.5</u>	<u>4089.7</u>
Escalation	1615.9	1615.9	1155.6
Development (RDT&E)	(40.3)	(40.3)	(39.8)
Procurement	(1575.6)	(1575.6)	(1115.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	<u>5636.4</u>	<u>5636.4</u>	<u>5245.3</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>188</u>	<u>188</u>	<u>188</u>
Total	188	188	188
c. (U) Foreign Military Sales/International Cooperative Programs --			
None.			
d. (U) Nuclear Costs --			
None.			
e. (U) References --			

(U) Development Estimate:
FY96/97 President's budget dated February 1995.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated June 19, 1995.

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12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY93\$)	4089.7	4020.5	
(2) Quantity	188	188	
(3) Unit Cost	21.754	21.386	1.72
b. (U) Procurement			
(1) Cost (BY93\$)	3520.0	3512.1	
(2) Quantity	188	188	
(3) Unit Cost	18.723	18.681	0.22

13. (U) Cost Variance Analysis:

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

	RD&E	PROC	MILCON	TOTAL
Development Estimate	548.7	5087.7	0.0	5636.4
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-7.4	-461.6	-	-469.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	50.9	-	+50.9
Estimating	68.2	-125.3	-	-57.1
Other	-	-	-	-
Support	-	84.1	-	+84.1
Subtotal	+60.8	-451.9	-	-391.1
Total Changes	+60.8	-451.9	-	-391.1
Current Estimate	609.5	4635.8	-	5245.3

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

a. (U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	508.4	3512.1	0.0	4020.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	32.1	-	+32.1
Estimating	61.3	-84.4	-	-23.1
Other	-	-	-	-
Support	-	60.2	-	+60.2
Subtotal	+61.3	+7.9	-	+69.2
Total Changes	+61.3	+7.9	-	+69.2
Current Estimate	569.7	3520.0	-	4089.7

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	--	-7.4
Prior and current year inflation offset (Estimating)	--	-3.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase in RDT&E funding (see offsetting decrease in Procurement) for Non-recurring engineering determined to be RDT&E vice Procurement effort. (Estimating)	+56.8	+66.0
Increase for Radar, ALFS and ESM integration efforts. (Estimating)	+4.2	+4.9
Decrease for Small Business Innovation Research assessments, Defense Business Operations Fund, and other RDT&E undistributed reductions. (Estimating)	-4.5	-5.1
Increase for Block II Phase II contract. (Estimating)	+4.8	+5.6
RDT&E Subtotal	<u>+51.3</u>	<u>+60.8</u>

(2) Procurement

Revised escalation indices. (Economic)	--	-461.6
Addition of SATCOM, SINGARS, SMU, and HUMS ECP's. (Engineering)	+32.1	+50.9
Decrease in Procurement (see offsetting increase in RDT&E) for realignment of funds for Non-recurring engineering determined to be RDT&E vice Procurement effort. (Estimating)	-56.8	-66.0
Refinement of prior estimates. (Estimating)	-27.6	-59.3
Refinement of estimates for support and spares. (Support)	+60.2	+84.1
Procurement Subtotal	<u>+7.9</u>	<u>-451.9</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
29.981	-2.495	0.001	--	0.271	-0.304	--	0.447	-2.080	27.901

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

a. (U) <u>EDT&E --</u>			Initial Contract Price		
(U) <u>Development (ALFS):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Hughes Aircraft Company, Fullerton, CA					
N00019-92-C-0001, CPIF			\$31.4	\$0.0	4
Award: December 31, 1991					
Definitized: December 31, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$53.9	\$0.0	6	\$64.6	\$65.4	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/30/95)			\$-12.6	\$-2.9	
Net Change			\$-15.4	\$-1.8	
			\$-2.8	\$1.1	

Explanation of Change:

The completion of delinquent system development and test milestones account for the improvement to the unfavorable cumulative schedule variance. The additional cost associated with rework and test delays is the primary reason for the additional cost growth.

(U) <u>Development (Block II):</u>			Initial Contract Price		
LORAL, Owego, NY			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-93-C-0196, CPFF					
Award: August 23, 1993			\$242.0	\$0.0	2
Definitized: December 22, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$266.5	\$0.0	2	\$274.6	\$281.5	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (01/31/96)			\$0.0	\$0.0	
Net Change			\$-7.6	\$-5.5	
			\$-7.6	\$-5.5	

Explanation of Change:

Technical and software productivity issues related to the development of the Integrated Mission Processor (IMP) subsystem, and software and engineering design activities associated with the Radar and Data Display subsystems are the primary drivers behind the unfavorable cumulative cost and schedule variances.

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

a. (U) Program Status --

- (1) Percent Program Completed: 31.8% (7 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 7.0% (\$368.0 / \$5245.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY90-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2011)	Total
RDT&E	306.0	62.0	39.0	202.5	609.5
Procurement	-	-	-	4635.8	4635.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	306.0	62.0	39.0	4838.3	5245.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1990				11.1	10.3	10.3	10.2	4.0
1991				29.6	28.5	28.5	27.7	4.3
1992				53.7	53.2	53.1	52.5	2.8
1993				72.1	73.1	72.9	71.8	2.7
1994				68.5	70.8	70.8	66.7	2.0
1995				66.5	70.1	68.6	61.4	1.9

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

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1996				57.6	62.0	57.3	22.2	2.0
1997				35.5	39.0			2.2
1998				46.8	52.6			2.2
1999				62.6	72.0			2.3
2000				45.4	53.4			2.2
2001				16.2	19.5			2.2
2002				4.1	5.0			2.2
Subtot				569.7	609.5	361.5	312.5	

Appropriation: 1506 Aircraft Procurement, Navy

1998				67.2	77.2			2.2
1999	4	106.9	62.5	213.2	250.5			2.3
2000	15		232.6	322.1	386.8			2.2
2001	15		225.0	323.2	396.7			2.2
2002	15		204.4	284.1	356.4			2.2
2003	19		254.9	326.7	418.8			2.2
2004	20		265.3	337.4	442.0			2.2
2005	20		263.1	335.4	449.1			2.2

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

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2006	20		261.4	323.8	443.1			2.2
2007	20		260.1	321.6	449.7			2.2
2008	20		258.9	319.5	456.6			2.2
2009	20		257.9	267.4	390.6			2.2
2010				39.5	58.9			2.2
2011				38.9	59.4			2.2
Subtot	188	106.9	2546.1	3520.0	4635.8			
Grand Total	188	106.9	2546.1	4089.7	5245.3	361.5	312.5	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

O&S costs remain unavailable. Estimated availability date in November 1996.

- b. (U) Costs -- None.

O&S costs are unavailable at this time.

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

e. (U) Contractor Support Costs -- None.

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*** UNCLASSIFIED ***

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

PROGRAM: C-17

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
C-17 Globemaster III

SAF/PAS

2. DoD Component: USAF

96-251 - T

3. Responsible Office and Telephone Number:

C-17 SYSTEMS PROGRAM OFFICE
AERONAUTICAL SYSTEMS CENTER
2600 PARAMOUNT PLACE
FAIRBORN, OH 45324-6766

M/GRN RONALD T. KADISH
Assigned: October 1, 1993
AV 785-1545 COMM 513-255-1545

4. Program Elements/Procurement Line Items:

RDTE&E:

FE 0604227F (Shared) Project 663282
FE 0604231F
FE 0604609F (Shared) Project 663263 (Shared)
FE 041130F

PROCUREMENT:

APPN 3010 ICN C017AD (Air Force)

MILCON:

FE 0401130F

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FOR OPEN PUBLICATION

17 MAR 25 1996

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

5. Related Programs:

None

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6. Mission and Description:

The purpose of the C-17 aircraft is to modernize the airlift fleet and improve the overall capability of the U.S. to rapidly project, reinforce and sustain combat forces worldwide. The aircraft will augment the C-5 and C-141 in intertheater deployment and the C-130 with intratheater operations. Because the C-17 will be capable of carrying outside cargo over intertheater ranges into austere airfields, it introduces a direct deployment capability that will significantly improve airlift responsiveness. This improved responsiveness will, in turn, dramatically improve the mobility of our general purpose forces.

Significant features of the multi-engine C-17 include: supercritical wing design and winglets to reduce drag and increase fuel efficiency and range; receiver inflight refueling capability to increase range; externally blown flap configuration, direct lift control spoilers and high impact landing gear system, all of which contribute to the aircraft's capability to operate into and out of small austere airfields; forward and upward directed thrust reverser system that provides backup capability, reduces the aircraft ramp space requirements, and minimizes interference of dust and debris on the activities of ground personnel; cargo door, ramp airdrop and cargo restraint systems that are operable by a single loadmaster and permit immediate equipment offload without special handling equipment; two man cockpit with cathode ray tube displays that reduce complexity and improve reliability; maximum use of built-in test features to reduce maintenance and troubleshooting times; and walk-in avionics bays that improve accessibility. The end result is significantly reduced maintenance manhours per flight hour.

7. Program Highlights:

a. Significant Historical Developments --

A SECDEF decision during the FY81 budget review directed funding for a new aircraft which placed increased emphasis on strategic airlift capability. The initial C-X Program Management Directive (PMD) was issued on 10 Dec 79. The requirements for the C-17 aircraft were formalized by the C-X Mission Element Need Statement, dated 28 Nov 80. In Aug 81, SECAF announced Douglas Aircraft Company (DAC) as the winner of the C-X source selection. (Note: Douglas Aircraft Company-Government Segment was renamed McDonnell Douglas Aerospace-Transport Aircraft (MDA) in Oct 92.)

On 23 Jul 82, the Full Scale Engineering Development (FSED) contract was awarded to DAC. A revised PMD was issued in Jul 83 which directed the continuation of C-17 design effort and the initiation of activities leading to an FSED start by FY85 and a production start by FY88.

In Jan 88, the first competitively-priced production option for two

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7a. Program Highlights (Cont'd):

aircraft was exercised, along with long lead for the second production option for four aircraft. Assembly start for the first test aircraft occurred at DAC in Long Beach CA, on 24 Aug 88. Milestone IIIA approval was received on 18 Jan 89 for the next two lots of C-17s.

In Sep 90, the C-17 quantity was decreased from 210 to 120 aircraft as a result of a Major Aircraft Review.

On 21 Dec 90, DAC completed the assembly of the test aircraft, a major program milestone and prerequisite for the award of the next production contract. On 15 Sep 91, a successful first flight to Edwards AFB CA initiated the C-17 Flight Test Program.

In 1992, static load and durability testing for full-scale C-17 structural airframes was initiated. A static wing failure during testing in Oct 92, delayed the static test program; however, the final ultimate wing load test condition was successfully completed in Jan 94. Full scale durability testing completed 1.5 lifetime milestone in Nov 94.

On 30 Apr 93, the Under Secretary of Defense for Acquisition convened a special Defense Acquisition Board (DAB) C-17 program review. The Under Secretary assigned action items to be accomplished, including the requirements in the FY93 National Defense Authorization Act and reviews of a Cost and Operation Effectiveness Analysis, the Joint Requirements Oversight Council on requirements, and the Cost Analysis Improvement Group on affordability. A second DAB review concluded on 8 Nov 93 and the Milestone IIIB decision was scheduled for Nov 95. In the interim, the procurement of 40 aircraft was considered an appropriate number to evaluate whether program cost, schedule and performance warrant completing the 120 aircraft buy. An Acquisition Decision Memorandum was issued reducing procurement quantity from 120 to 40 aircraft. The quantity decrease caused the unit cost to increase in excess of the 15% threshold. A Nunn-McCurdy breach was declared in the 31 Dec 93 SAR.

As a result of Defense Science Board recommendations and Nov 93 DAB results, the C-17 System Program Office and MDA implemented a new management plan for the C-17 program under the auspices of an Integrated Master Plan. Integrated Product Development utilized Integrated Product Teams (IPTs). IPTs managed the program and concentrated on achieving three key program goals: (1) Initial Operational Capability (IOC); (2) Reliability, Maintainability and Availability Evaluation; and (3) Milestone III.

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7a. Program Highlights (Cont'd):

On 6 Jan 94, the settlement agreement resolving claims and program disputes was signed by the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) and MDA. Funding was approved for the settlement in the FY95 Appropriations Act. In Feb 95, contract modifications were signed to execute the settlement agreement.

On 3 Jun 94, the C-17 Globemaster III set its 22nd world record. This record was for short take-off & landing aircraft carrying the greatest payload to an altitude of 2,000 meters.

In Aug 94, initial aircrew ground training for co-pilots and loadmasters transitioned to Altus AFB OK from Charleston AFB SC. A Weapon System Trainer, which included a loadmaster station and a cargo compartment trainer, became operational. A cockpit systems simulator was also installed.

In Aug 94, during a dual-door personnel airdrop test flight, two paratroopers made brief contact during descent. Both troopers landed without injury. However, an Executive Independent Review Team (EIRT), co-chaired by the Air Force and the Army, was chartered to analyze the paratroop entanglement phenomenon. The EIRT determined the C-17 less probable to have an entanglement problem than other platforms (e.g., C-141 and C-5). The team's comprehensive analysis concluded that a combination of revised operational procedures and minor aircraft configuration changes provided a greater margin of separation between descending troopers. Since these changes were implemented, no entanglements have occurred.

On 26 Sep 94, the Under Secretary of the Air Force initiated the C-17 Should Cost Review to consider costs for future C-17 production buys. The Should Cost team's findings had direct impact on reducing unit flyaway costs for follow-on production buys.

A planning DAB was held 2 Nov 94 to review plans for the Nov 95 DAB. A special C-17/Non-Development Airlift Aircraft Program Acquisition Decision Memorandum was issued 16 Nov 94. An updated Acquisition Program Baseline (APB) was signed by USD(A&T) on 10 Nov 94. This APB incorporated the program changes implemented by the 6 Jan 94 settlement agreement and contained updated key performance parameters validated by the Joint Requirements Oversight Council.

On 22 Nov 94, the Program Executive Officer certified the C-17 as ready to begin Dedicated Initial Operational Test and Evaluation (DIOT&E). The decision was made to conduct DIOT&E in phases. Phase I started in Dec 94 to evaluate flight and ground cargo handling characteristics. Phase II began in Jan 95 to execute full flight operations, except for mass static line paratroop airdrop, which was

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7a. Program Highlights (Cont'd):

reserved for the third phase to be conducted after the EIRT review.

On 16 Dec 94, the development flight test program formally concluded with the completion of over 5,700 total test points. Data analysis and reporting continued through Mar 95. The program began a follow-on development test program to test enhancements and corrective actions to clean up any issues remaining from the Engineering and Manufacturing Development test program. IOC was declared by Air Mobility Command on 17 Jan 95.

The C-17 Globemaster was awarded the Collier Trophy for the top aeronautical achievement of 1994.

b. Significant Developments Since Last Report --

On 10 Feb 95, the President designated the C-17 Globemaster III strategic airlifter program one of the highest national priorities. As a result of this BRICK BAT designation, the program is authorized to use the DX industrial priority rating for contracts and orders placed in support of the program. The program will also benefit from the designation in support of missions and exercises.

The C-17 Defensive Systems Team received the Aviation Week & Space Technology 1994 Laurel Award for outstanding achievement in the field of electronics.

Follow-on Flight test was initiated in May 95 at Edwards AFB CA. Tests performed in the follow-on phase supports producibility enhancements, performance improvements and problem investigations.

On 13 Jul 95, the Producibility Enhancement/Performance Improvement contract was awarded. This contract will be used as the contractual vehicle to mature the aircraft.

The second lifetime of full scale durability testing was completed in Jul 95. A third lifetime of testing began in Oct 95 to extend the planned service life to 45,000 flight hours.

Live Fire testing, designed to assess C-17 survivability against designated threats, was successfully completed in August 1995. The C-17 was found to be survivable in the threat environment for which it was designed.

The Air Force Operational Test and Evaluation Center (AFOTEC) completed data gathering for the Dedicated Initial Operational Test and Evaluation program in Aug 95. AFOTEC rated the C-17 as overall operationally effective and suitable.

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7b. Program Highlights (Cont'd):

The C-17 is now conducting operations around the globe. In Aug 95, the C-17 was deployed to Kuwait in Operation Intrinsic Action to support readiness. The C-17 flew relief missions to the Caribbean in the aftermath of Hurricane Marilyn. The short airfield capability of the aircraft proved essential in providing aid to the devastated U.S. Virgin Islands. The C-17 delivered 30% of the tonnage in only 18% of the total airlift missions.

The Lot VII (FY95) production contract was awarded on 12 Sep 95.

On 20 Sep 95, the C-17 Air Force/Industrial Team won the Air Force Association's David C. Schilling Award. The Schilling Award was presented for "the most outstanding achievement in the field of manned flight in the atmosphere or space."

On 1 Nov 95, the Milestone III Defense Acquisition Board directed the Air Force to plan, program and budget for a total of 120 C-17s at the maximum affordable rate and to plan, program and budget for changes necessary to mature the aircraft. Based on a thorough analysis, DoD concluded that the C-17 provided the greatest amount of flexibility to meet the nation's airlift requirements at an affordable price.

Twelve C-17s were deployed to Rhein Main AB, Germany to provide airlift support for the NATO peacekeeping mission in Bosnia. The installation of Airlift Defensive System and Aircrew Armor was accelerated on aircraft supporting the Bosnian deployment. The Globemasters completed over 400 missions, transported over 2,800 passengers and carried 15,000 short tons of cargo. In spite of harsh weather and austere airfield conditions, a departure reliability rate of 97% was recorded.

During the year, the program consistently met its schedule commitments. Quality aircraft continued to deliver ahead of scheduled dates.

This system will satisfy mission requirements.

c. Changes Since As Of Date --

The field support contract was awarded on 21 Feb 96; the Lot VIII contract was awarded 23 Feb 96.

On 10 Jan 96, a special Defense Acquisition Board was convened to consider an Air Force proposal for the multiyear procurement (MYP) for 80 additional C-17 aircraft to complete the 120 aircraft program. The proposal was for a seven year MYP with \$300M for Economic Order Quantity requirements. On 1 Feb 96, USD(A&T) approved the Air Force

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7c. Program Highlights (Cont'd):

proposal to proceed with this MYP program upon enactment of implementing legislation. The C-17 System Program Office is currently negotiating and will be ready to sign the MYP contract upon Congressional approval.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline dated 1 Mar 96, and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Source Selection Decision	AUG 81	N/A	AUG 81
Contract Award	JUL 82	N/A	JUL 82
Start PSED	FEB 85	N/A	FEB 85
Milestone II (DSARC)	NOV 87	FEB 85	FEB 85
First Full Funded Production Lot	JAN 88	JAN 88	JAN 88
Milestone IIIA (DAB)	NOV 87	JAN 89	JAN 89
Low-Rate Initial Production	N/A	JAN 89	JAN 89
First Flight	JUN 91	N/A	SEP 91
T-1 First Flight	N/A	JUN 91	SEP 91
IOC (Delivery of 12 A/C to sqdn)	JUN 93	JAN 95	JAN 95
Complete DT&E/IOT&E	JUN 93	N/A	N/A
DT&E			
Start	N/A	JUN 91	SEP 91
Complete	N/A	DEC 94	DEC 94
IOT&E			
Start	N/A	DEC 94	DEC 94
Complete	N/A	JUN 95	JUN 95
Full Rate Production Contract Award	N/A	FEB 96	FEB 96 (Ch-1)
RML&E (Formerly ORE)	N/A	JUL 95	AUG 95 (Ch-2)
Milestone IIIB	SEP 93	NOV 95	NOV 95
FOC	SEP 01	TBD	TBD
Depot Support Date	N/A	TBD	TBD

b. Previous Change Explanations --

First Flight changed from Jun 91 to Sep 91 based on the actual date of T-1 first flight.

IOC changed from Jun 93 to Jan 95 due to a change in IOC definition from P-12 to P-16, delayed delivery schedule, and additional AMC requirements.

DT&E Complete changed from Dec 93 to Nov 94, IOT&E Start changed

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9b. Schedule (Cont'd):

from May 93 to Sep 94, and IOT&E Complete changed from Nov 93 to Mar 95 due to the following reasons: delayed delivery schedule, change in the interpretation of "DT&E Complete" to include completion of all-weather testing, deferred manufacturing work, immature aircraft systems, less than planned flight test efficiency, flight test rebaselining, and AFOTEC's finalization of criteria for starting IOT&E.

RM&AE changed from Oct 94 to Feb 95 due to the revised contract delivery schedule and the additional AMC requirements. The 30 day link between IOC and RM&AE was removed and RM&AE was rescheduled from Feb 95 to Jul 95.

Milestone IIIB changed from Sep 93 to Nov 95 due to delayed delivery schedule, flight test rebaselining, and AFOTEC's finalization of criteria for starting IOT&E. Nov 95 was designated for the DAB decision to extend the production program beyond the 40 aircraft probationary period.

The Full Rate Production Contract Award and Depot Support Date current estimates were changed to TBD pending the Milestone III decision.

FOC changed from Sep 01 to May 03 because of the delayed delivery schedule. FOC was changed from May 03 to Sep 98 based on delivery of 40 versus 120 aircraft and then to TBD pending the MSIII decision.

c. Current Change Explanations --

(Ch-1) The full rate production contract award change from TBD to Feb 96 to reflect the award of the Lot VIII contract on 23 Feb 96.

(Ch-2) The RM&AE completion date changed from Jul 95 to Aug 95. This change reflects the 5 Aug 95 completion of RM&AE. The date reported in the last SAR reflects the scheduled beginning of the effort.

d. References --

Production Estimate:

Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:

Approved Acquisition Program Baseline dated March 01, 1996.

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10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Maintenance Manhours Per Flying Hour (Air Vehicle)	14.6	N/A	/ N/A	N/A	N/A	(Ch-1)
Mean Time Between Maintenance Inherent (hrs) (MTBIMI)	1.69	N/A	/ N/A	N/A	N/A	(Ch-1)
Mean Time Between Maintenance Corrective (hrs) (MTBMC)	.83	.78	/ .75	1.56	0.98	(Ch-2)
Mean Time Between Removal (hrs) (MTBR)	5.37	2.8	/ 2.5	7.45	4.67	(Ch-2)
Mean Manhours to Repair (hrs)	4.51	7.35	/ 7.35	2.70	6.67	(Ch-2)
Maximum Take-off Gross Weight (lbs) (TOGW)	580000	N/A	/ N/A	N/A	N/A	(Ch-1)
Maximum Payload (lbs)	172200	N/A	/ N/A	N/A	N/A	(Ch-1)
Payload at Range (lbs @ 2400 nm)	167006	N/A	/ N/A	N/A	N/A	(Ch-1)
Range Unrefueled (nm)	2372	N/A	/ N/A	N/A	N/A	(Ch-1)
Landing Field Length (ft)	2541	3,000	/ 3,000	2500	2900	
Takeoff Field Length (ft)	7370	N/A	/ N/A	N/A	N/A	(Ch-1)
Cruise Speed (Mach) (450 KTAS)	.77	N/A	/ N/A	N/A	N/A	(Ch-1)
Backup Capability (% grade)	2	2	/ 1.5	3.8	3.8	
Mission Completion Success Probability (%)	94	N/A	/ N/A	N/A	N/A	(Ch-1)
Payload Range at 3200 nm (LBS)	N/A	130,000	/ 110,000	113000	131000	(Ch-3)
Turning Capability (ft for 180 degree turn)	N/A	96	/ 90	96/80	96/80	(Ch-4)
Vehicles/Rolling Stock/Outside Cargo (no of vehicle load configurations)	N/A	15	/ 15	15	15	
Airdrop No. of persons	N/A	102	/ 102	102	102	(Ch-5)

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
LBS of heavy eqmt	N/A	110,000 / 60,000	110000/ 60000	110000/ 60000
No. of CDS bundles	N/A	40 / 30	30	40

b. Previous Change Explanations --

Payload weight requirements were changed to show that the payload for the program was decreased to account for government directed changes to the design of the C-17 aircraft. The current estimate for Payload at Range changed from 167,006 lbs to 160,000 lbs, and the current estimate for Range Unfueled changed from 2,372 to 2,400 nautical miles.

The estimate for Landing Field Length was adjusted from 2,541 to 2,740 feet to account for the latest projected operating weight and for higher approach speeds which resulted from a preliminary assessment of high lift aerodynamic testing. The Current Estimate for Takeoff Field Length was adjusted from 7,370 to 7,660 feet to account for an increase in the maximum takeoff gross weight from 580,000 lbs to 585,000 lbs.

Estimates for the Reliability, Maintainability, and Availability parameters were changed to account for the latest analyses and aircraft design. Maintenance Manhour per Flying Hour, MTBMI, MTBMC and MTBR changed due to system maturity and RM&A investments. The demonstrated performance for Maximum Payload changed from N/A to 169,000 lbs. This value represents data from the completion of the Static Test.

The Payload at Range (2,400nm) changed from 155,083 lbs to N/A because there was no range payload demonstration at the 2,400 nm parameter. Range unrefueled was not demonstrated at the 2,400 nm parameter; the metric is reported at 3,200 nm.

Landing Field Length reflects changes in the 10 Nov 94 APB. Demonstrated performance was changed from N/A to 2,500 feet. On 18 Nov 94, the C-17 landed with 161,000 pound payload in 2,500 feet. Takeoff Field Length current estimate improved to reflect analysis on the final flight test data.

Demonstrated and current estimate for back-up capability was improved from 2% to 3.8%. Demonstration was completed in actual conditions at McChord AFB WA on 24 May 94.

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10b. Performance Characteristics (Cont'd):

Turning Capability was added in the Nov 94 APB. An unassisted 180 degree turn on a paved runway 90 feet wide (threshold)/on a USMC expeditionary airfield, aluminum mat, 96 feet wide (objective). The capability to turn 180 degrees unassisted on a 90 feet wide runway was demonstrated during flight test at Edwards AFB CA.

Vehicles/Rolling Stock/Outsize Cargo was added in the Nov 94 APB. The C-17 has demonstrated the capability to carry rolling stock to include outsize cargo.

Airdrop added in the Nov 94 APB. The C-17 has the capability to airdrop 102 paratroopers, 60,000 lbs (single platform) heavy equipment loads (threshold) 110,000 lb objective, and 30 Container Delivery System (CDS) bundles (threshold).

c. Current Change Explanations --

(Ch-1). These performance characteristics were deleted from the APB in Nov 94. Current metrics are not available for these parameters. These items will not be reported in subsequent Selected Acquisition Reports.

(Ch-2). The demonstrated performance value for Mean Time Between Maintenance Corrective, Mean Time Between Removal (MTBR), and Mean Manhours to Repair improved to reflect results of the RM&AE. The current estimate for Mean Manhours to Repair is a projection of the long term mature value.

(Ch-3). The value for demonstrated performance for Payload Range at 3,200nm changed from N/A, reported in the 31 Dec 94 SAR, to 113,000 pounds. In Aug 95, the aircraft carried a 113,000 pound payload on a 3200nm operational test mission to demonstrate the payload range threshold.

The current estimate for Payload Range at 3,200nm increased from 127,000 pounds reported in the last SAR to 131,000 pounds. The estimate is based on an updated computational projection of the capability of P33, which is the baseline performance aircraft.

(Ch-4). The demonstrated performance and current estimate for Turning Capability changed from 90 to 96/80 to reflect the demonstrated 180 degree turns on both a 96 feet wide aluminum mat and an 80 feet wide paved runway. Both were accomplished during flight testing at Edwards AFB CA.

(Ch-5). The demonstrated performance of number of persons airdropped changed from 70 to 102 since the last report. A series of

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10c. Performance Characteristics (Cont'd):

three dual door mass drop sorties of 102 paratroopers was successfully completed 20-28 Apr 95 at the US Army Proving Grounds AZ. The US Army Test and Evaluation Command issued a formal safety release for the C-17 on 28 Apr 95.

d. References --

Production Estimate:

Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:

Approved Acquisition Program Baseline dated March 01, 1996.

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

a. Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	6463.2	7733.3	7617.1
Procurement	34419.2	32824.2	32448.2
Airframes	(22158.8)		(22786.6)
Engines	(5478.3)		(2264.7)
Avionics	(1168.8)		(866.7)
ECO			(284.0)
Product Improvement			(262.6)
Non Recurring			(1005.9)
Total Flyaway	(28805.9)		(27470.5)
Total Other Weapon System			(0.0)
Peculiar Support	(2267.0)		(2992.6)
Initial Spares	(3346.3)		(1985.1)
Construction (MILCON)	368.5	334.4	328.1
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	41250.9	40891.9	40393.4
 Escalation	 561.0	 2369.8	 1357.2
Development (RDT&E)	(-1122.3)	(-998.6)	(-916.0)
Procurement	(1673.7)	(3356.8)	(2266.3)
Construction (MILCON)	(9.6)	(11.6)	(6.9)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	41811.9	43261.7	41750.6

Total Program changed due to the quantity increase from 40 to 120 aircraft and the addition of costs to mature the aircraft.

The costs in this report reflect a Multiyear Procurement (MYP) strategy approved in the 1 Feb 96 Acquisition Decision Memorandum.

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

The APB dated 1 Mar 96, reflects the proposed MYP savings.

The program base year changed from BY81 reported in the 31 Dec 94 to BY96 in the current report. The Office of the Secretary of Defense raw inflation rates published in Jan 95 were used to convert the Production Estimate to BY96. The rate for aircraft procurement was 1.868; the rate for both development and construction was 1.721.

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b. Quantity --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	0	0	0
Procurement	<u>210</u>	<u>120</u>	<u>120</u>
Total	210	120	120

NOTES:

The quantity excludes one aircraft (T-1) that is fully configured as a test article; however, it is not reconfigured to the production configuration.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

Program Management Directive 0020(22), dated 10 May 89. Amended FY91 President's Budget.

Approved Program:

Approved Acquisition Program Baseline dated March 01, 1996.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 96 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY96\$)	40393.4	40891.9	
(2) Quantity	120	120	
(3) Unit Cost	336.61	340.77	-1.22

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>DCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY96\$)	32448.2	32824.2	
(2) Quantity	120	120	
(3) Unit Cost	270.40	273.54	-1.15

These costs are reported in Base Year 96 dollars in millions.

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	5340.9	36092.9	378.1	41811.9
Previous Changes:				
Economic	+7.5	-209.2	-6.9	-208.6
Quantity	-	-23288.1	-	-23288.1
Schedule	-	+1720.6	+10.1	+1730.7
Engineering	+17.5	+50.6	-	+68.1
Estimating	+384.2	+4152.9	-140.7	+4396.4
Other	+170.0	+178.0	-	+348.0
Support	-21.8	-3435.2	-	-3457.0
Subtotal	+557.4	-20830.4	-137.5	-20410.5
Current Changes:				
Economic	92.7	0.9	-0.5	+93.1
Quantity	-	11904.8	-	+11904.8
Schedule	-	1219.2	-	+1219.2
Engineering	-	35.9	-	+35.9
Estimating	710.1	3149.2	94.9	+3954.2
Other	-	-	-	-
Support	-	3142.0	-	+3142.0
Subtotal	+802.8	+19452.0	+94.4	+20349.2
Total Changes	+1360.2	-1378.4	-43.1	-61.3
Current Estimate	6701.1	34714.5	335.0	41750.6

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

a. 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	-	-19343.3	-	-19343.3
Schedule	-	+315.1	-	+315.1
Engineering	+18.1	+40.0	-	+58.1
Estimating	+382.1	+3185.9	-127.2	+3440.8
Other	+171.6	+170.7	-	+342.3
Support	-28.1	-3273.1	-	-3301.2
Subtotal	+543.7	-18904.7	-127.2	-18488.2
Current Changes:				
Quantity	-	10415.5	-	+10415.5
Schedule	-	326.3	-	+326.3
Engineering	-	41.4	-	+41.4
Estimating	610.2	3472.1	86.8	+4169.1
Other	-	-	-	-
Support	-	2678.4	-	+2678.4
Subtotal	+610.2	+16933.7	+86.8	+17630.7
Total Changes	+1153.9	-1971.0	-40.4	-857.5
Current Estimate	7617.1	32448.2	328.1	40393.4

The program base year changed from BY81 reported in the Dec 94 SAR to BY96 reported in the current report. Raw inflation rates published in Jan 95 were used to convert the production estimate and previous changes to BY96.

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Engineering: Revised estimates for the development of the Airlift Defensive Systems program.

Estimating: Revised estimates as a result of updated annual estimates, external program decisions, adjustments of current and prior year escalation changes, additional Economic Price Adjustment liability,

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

Congressional funding adjustments, reflection of prior actual costs, and miscellaneous DoD program adjustments. In addition, budget for the 6 Jan 94 settlement for flight test was added.

Other: Additional funding provided through 6 Jan 94 settlement (claims, flight test) between the government and contractor.

Support: Revised estimates as a result of updated annual estimates of contractor and other government costs for training, data, simulator, and peculiar support equipment; current and prior year escalation changes; and current and prior year actuals. Support effort required by the 6 Jan 94 settlement for flight test was added.

Procurement

Economic: Revised economic escalation indices. An economic adjustment was made for the negative program change.

Quantity: Deleted 170 aircraft.

Schedule: Changed schedule applicable to stretch-out of program. Revised procurement quantity for FY92 and FY93 from 6/12 to 4/8. Recategorized variance in the Dec 90 SAR. Allocation to schedule due to quantity decrease in Dec 93 SAR. Revised schedule for FY95-FY96 from buy profile 8-12 to 6-8.

Engineering: Added Defensive Systems (Defensive Avionics capability) to the C-17. Revised estimate for TACAN and Airlift Defensive Systems program. Allocation to engineering due to quantity decrease.

Estimating: Estimating changes as a result of updated annual estimates, external program decisions, including slower build rates, adjustments for current and prior year actuals and escalation changes, additional requirement to fund lots to ceiling, Congressional funding adjustments, miscellaneous DoD program adjustments, and a revised multi-year procurement strategy. Allocation to estimating due to quantity decrease.

Other: Additional funding provided for the 6 Jan 94 settlement enactment. The settlement between the government and the contractor resolved claims and initiated systems improvements to CAD/CAM, Management Information System, and Advanced Quality System.

Support: Estimating changes as a result of the aircraft quantity reduction, updated annual estimates,

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

external program decisions including slower build up rates, adjustments to current and prior year actuals and escalation changes, revised multi-year procurement strategy, Congressional funding adjustments, incorporation of stock funding for initial spares, addition of Common Support Equipment (CSE) due to Integrated Weapon System Management (IWSM) and Interim Contractor Support (ICS) and changed requirements for support equipment and spares due to changes in quantity.

MILCON

Economic: Revised economic escalation indices.
 Schedule: The schedule change is due to a delay in projects to later years due to program stretch out.
 Estimating: Decreased Military construction projects applicable to the decrease of aircraft. Adjustment for current and prior year escalation changes. The estimate increased due to rephasing the buy and delivery schedule. Funding was realigned to support C-17 program activities.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+92.7
Adjustment for Current and Prior Inflation. (Estimating)	-117.8	-100.3
The costs of continuing product improvement program approved at the Nov 95 milestone decision (Estimating)	+750.0	+832.5
Program cuts used to support the Bosnian effort and both omnibus and below threshold reprogramming actions (Estimating)	-22.0	-22.1
 RDT&E Subtotal	 <u>+610.2</u>	 <u>+802.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.9
Total variance associated with increase of 80 units.	+14082.0	+16102.5

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Quantity Variance resulting from change in procurement of 80 additional aircraft (Quantity)	+10415.5	+11904.8
Schedule variance associated with the 80 aircraft quantity increase. (Schedule)	+326.3	+1219.2
Engineering variance associated with the 80 aircraft quantity increase (Engineering)	+41.4	+35.9
Estimating variance associated with the 80 aircraft quantity increase (Estimating)	+3298.8	+2942.6
Adjustment for Current and Prior Inflation. (Estimating)	+195.4	+227.2
Funding cuts required to support the Bosnian effort and omnibus and below threshold reprogramming actions (Estimating)	-96.9	-95.8
Pending reprogramming of funds from the FY94 Non-Development Airlift Aircraft program line required for EOQ to support the Multiyear Procurement strategy (Estimating)	+74.8	+75.2
Adjustment for Current and Prior Inflation. (Support)	-6.1	-4.9
Equipment, training and data required to support additional 80 aircraft (Support)	+603.9	+687.8
Contracted support required to maintain additional aircraft quantity (Support)	+819.4	+953.2
Program mission support was previously accounted for in the Strategic Airlift procurement line (Support)	+166.1	+189.6
Increase in initial spares required to support the additional aircraft (Support)	+1095.1	+1316.3
Procurement Subtotal	+16933.7	+19452.0
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-0.5
Adjustment for Current and Prior Inflation. (Estimating)	-1.9	-1.9

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Facility requirements to support additional 80 aircraft (Estimating)	+88.7	+96.8
MILCON Subtotal	<u>+86.8</u>	<u>+94.4</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Prod Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
189.30	-16.62	--	5.04	1.82	13.76	--	5.80	9.80	199.10

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
199.10	-0.962	54.467	24.583	0.867	69.588	2.900	-2.625	148.818	347.92

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

a. Procurement --			Initial Contract Price		
<u>C-17 Lot V Production:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell-Douglas, Long Beach, CA			\$1624.3	\$1821.9	6
F33657-92-C-0031, FPIF					
Award: October 29, 1993					
Definitized: October 29, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1607.1	\$1802.7	6	\$1646.0	\$1666.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-38.8	\$-20.8	
Cumulative Variances To Date (12/31/95)			\$-27.2	\$2.3	
Net Change			\$11.6	\$23.1	

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15. Contract Information (Cont'd):

Explanation of Change:

COST VARIANCE: The majority of the positive cost variance through Dec 95 was due to an anomaly which occurred when Congress decided to buy two fewer aircraft than were provided for in the long lead procurement. The costs associated with these two aircraft were being charged to Lots V and VI (overstating these costs) instead of Lot VII (understating costs). A "Ship Roll" journal was made to align parts, standards, and actuals to the appropriate contract. Costs were transferred on the flaps and slats to align fiscal year costs with the build schedule.

SCHEDULE VARIANCE: The positive schedule variance for the reporting period was due to the early accomplishment of planned work. Aircraft P-18 through P-20, the last aircraft in Lot V, were delivered early and performance improvement was taken. An improved painting process which reduced painting labor hours was implemented beginning with P-19. In addition, statistical process control analysis indicated 75% of the paint was too thick. MDA worked with the vendor to improve paint quality. This process improvement will reduce paint time on subsequent aircraft.

The Lot V contract is 97% complete as of this reporting. The last aircraft of this lot was delivered Jun 95.

This is the final time this contract will be reported in the SAR.

<u>C-17 Lot VI Production:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Target</u>	<u>Ceiling</u>
McDonnell-Douglas, Long Beach, CA				
F33657-92-C-0037, FPIF	\$1628.2	\$1826.3		
Award: March 28, 1994				
Definitised: June 3, 1994				
			<u>Qty</u>	
			6	
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1642.3	\$1842.2	6	\$1638.1	\$1645.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-7.6	\$-23.6
Cumulative Variances To Date (12/31/95)			\$-2.3	\$-17.8
Net Change			\$5.3	\$5.8

Explanation of Change:

COST VARIANCE: The majority of the positive cost variance through Dec 95 was due to an anomaly which occurred when Congress decided to

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15. Contract Information (Cont'd):

buy two fewer aircraft than were provided for in the long lead procurement. The costs associated with these two aircraft were being charged to Lots V and VI (overstating these costs) instead of Lot VII (understating costs). A "Ship Roll" journal was made to align parts, standards, and actuals to the Lot VII contract.

The crew door and effort on the enhanced container vertical rails was moved to the Macon GA facility to take advantage of lower labor rates.

SCHEDULE VARIANCE: The majority of the improved schedule variance was attributable to the Northrop-Grumman-Vought propulsion subsystem. Northrop-Grumman-Vought implemented a more accurate way of calculating aircraft percent completion. In the old method, performance was taken equally on all parts. The higher priced parts were on time; however, this performance was reduced by the late delivery of lower priced parts. The new system weights performance by dollar value. Another major accomplishment was the delivery of the mission computer/electronic display subsystem. The early delivery of the main landing gear kits also contributed to the improved variance.

The Lot VI contract is 91% complete as of this reporting.

This is the final time this contract will be reported in the SAR.

<u>C-17 Lot VII Production:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
McDonnell-Douglas, Long Beach, CA				
F33657-93-C-0036, FPIF	\$1530.5	\$1675.9	6	
Award: September 12, 1995				
Definitized: June 28, 1994				
 <u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1530.5	\$1675.9	6	\$1530.5	\$1530.5
 <u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>
			N/A	N/A
<u>Cumulative Variances To Date (12/31/95)</u>			\$-5.3	\$-26.4
<u>Net Change</u>			\$-5.3	\$-26.4

Explanation of Change:

COST VARIANCE: The negative cost variance for Lot VII is due to \$5.7M incorrectly charged to Lot VII for a P-26 Horizontal Stabilizer which belonged in Lot VI. The charge was reversed in Jan 96.

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15. Contract Information (Cont'd):

SCHEDULE VARIANCE: The unfavorable schedule variance is due to a number of engineering design changes, adjustments in tooling, and waivers which were incorporated in the first aircraft of Lot VII. These changes resulted in the workers having to change manufacturing procedures which negatively impacted the learning curve. Schedule improvement is anticipated as the workers gain experience with new production processes. Out-of-position work for the wing spars, panels and wing half join contributed to the variance. Cargo ramp work in St. Louis was late in starting due to parts shortage. MDA has implemented a recovery plan including overtime authorization and staff reassignments to regain the schedule.

This is the first reporting of this contract in the SAR.

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>C-17 PE/PI Contract:</u>			
McDonnell-Douglas, Long Beach, CA			
F33657-95-D-2026, CPAF	\$194.7	N/A	N/A
Award: July 9, 1995			
Definitized: July 9, 1995			

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$200.1	N/A	N/A	\$357.6	\$357.6
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				N/A	N/A
Cumulative Variances To Date (12/31/95)				\$10.2	\$-20.3
Net Change				\$10.2	\$-20.3

Explanation of Change:

COST VARIANCE: The cost variance is positive due to performance being taken without the associated actual costs being completely journaled from management risk to the appropriate cost accounts. This problem will be resolved in early 1996 when the journals are completed. Part of the favorable cost variance is attributable to reduced staffing and integrated product team expenditures being below planned amounts. Since much of the work is level of effort, full performance is being taken at these reduced levels.

SCHEDULE VARIANCE: The primary reason for the negative schedule variance on this contract is due to the nacelle project underestimating the scope of the engineering effort. This has caused the nacelle manufacturer, Northrop-Grumman-Vought, to fall behind schedule. Action is being taken to acquire more work stations and to increase the number of engineers. If MDA follows these corrective actions, schedule should be recaptured. Another schedule driver was

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15. Contract Information (Cont'd):

in the fuselage assembly improvement phase III & IV projects. The contractor assumed gaining project approval, starting tool design and fabrication in the same month. When project approval slipped two months, the project phasing required adjustment. Schedule will be replanned starting in April 1996 with no impact to the planned end date.

This is the first reporting of this contract in the SAR.

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

a. Program Status --

- (1) Percent Program Completed: 59.3% (16 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 49.4% (\$20624.1 / \$41750.6)

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

<u>Appropriation</u>	<u>Prior Years</u> (FY81-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	5733.8	70.0	87.5	809.8	6701.1
Procurement	12081.3	2569.5	2204.2	17859.5	34714.5
MILCON	162.6	6.9	80.9	84.6	335.0
O&M	-	-	-	-	-
Total	17977.7	2646.4	2372.6	18753.9	41750.6

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Excl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1981				54.1	33.4	33.4	33.4	11.9
------	--	--	--	------	------	------	------	------

C-17, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (\$)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1982								9.2
1983				86.4	59.6	59.6	59.6	4.9
1984				37.4	26.8	26.8	26.8	3.8
1985				163.3	121.0	121.0	121.0	3.4
1986				461.7	350.4	350.4	350.4	2.8
1987				787.8	625.5	625.5	625.5	2.7
1988				1351.5	1101.5	1101.5	1101.5	3.0
1989				1098.7	938.3	933.0	933.0	4.2
1990				1026.0	903.9	903.9	903.9	4.0
1991				818.7	748.3	748.3	735.9	4.3
1992				268.8	252.9	252.0	252.0	2.8
1993				171.0	164.3	162.9	148.9	2.7
1994				228.8	223.5	219.4	144.1	2.0
1995				185.1	184.4	161.3	79.6	1.9
1996				68.8	70.0	2.5	0.3	2.0
1997				84.1	87.5			2.2
1998				100.7	107.1			2.3
1999				164.2	178.5			2.2

C-17, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2000				156.4	173.8			2.2
2001				148.9	169.0			2.2
2002				77.1	89.4			2.2
2003				77.6	92.0			2.2
Subtot				7617.1	6701.1	5701.5	5515.9	

Research and Development costs increased from the Dec 94 SAR to reflect the costs to mature the aircraft approved in the 3 Nov 95 Acquisition Decision Memorandum.

Obligations and expenditures are as of 31 Dec 95. This information was compiled from accounting and finance records.

Appropriation: 3010 Aircraft Procurement, Air Force

1987		32.2		74.3	61.2	61.2	61.2	2.7
1988	2	91.0	695.7	848.8	733.4	733.4	733.4	3.1
1989	4	17.3	1038.5	1329.9	1186.3	1186.3	1144.8	4.2
1990	4	77.2	1248.6	1641.4	1511.7	1511.6	1420.2	4.0
1991		80.3		244.7	233.7	232.9	178.5	4.3
1992	4	43.2	1389.3	1852.7	1804.5	1675.4	1508.6	2.8
1993	6	19.4	1928.8	1981.2	1959.4	1915.0	1824.4	2.7

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

1994	6	116.4	1847.7	2177.9	2191.0	1896.4	1387.4	2.0
1995	6	371.0	1702.9	2339.3	2400.1	1989.6	448.9	1.9
1996	8	0.4	1988.5	2449.5	2569.5	4.1	0.2	2.0
1997	8	6.3	1732.6	2056.2	2204.2			2.2
1998	9	6.2	1862.3	2290.2	2510.1			2.3
1999	13	6.2	2423.2	2831.0	3170.7			2.2
2000	15	6.0	2606.9	3026.0	3461.8			2.2
2001	15	6.0	2567.4	2954.4	3456.6			2.2
2002	15	5.9	2581.7	2766.3	3305.7			2.2
2003	5	120.9	850.5	1163.9	1422.3			2.2
2004				224.6	260.5			2.2
2005				143.7	183.4			2.2
2006				39.8	51.9			2.2
2007				12.4	16.5			2.2
Subtot	120	1005.9	26464.6	32448.2	34714.5	11205.9	8707.6	

The approved total program quantity for the C-17 is 120 aircraft. The costs reported reflect the Multiyear Procurement Strategy as approved in the 1 Feb 96 Acquisition Decision Memorandum.

Obligations and expenditures are as of 31 Dec 95. This information

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16c. Program Funding Summary (Cont'd):
 was compiled from accounting and finance records.

Appropriation: 3300 Military Construction, Air Force

1989				6.6	5.7	5.0	4.8	4.2
1990				5.4	5.0	4.7	4.7	4.0
1991				31.3	29.5	26.6	26.6	4.3
1992				79.2	76.1	75.9	71.7	2.8
1993				31.6	31.1	31.1	31.1	2.7
1994				15.1	15.2	15.1	14.1	2.0
1995								1.9
1996				6.6	6.9			2.0
1997				76.0	80.9			2.2
1998				8.9	9.7			2.3
1999				67.4	74.9			2.2
Subtot				328.1	335.0	158.4	153.0	
Grand Total	120	1005.9	26464.6	40393.4	41750.6	17065.8	14376.5	

Obligations and expenditures are as of 31 Dec 95. This information was compiled from accounting and finance records.

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	1/1
Procurement	23/23

- The above information reflects deliveries as of DEC 95.

b. Approved Design-to-Cost Objective -- N/A.

- Design-to-Cost Objective never established.

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average annual cost per C-17 squadron was derived by dividing the Air Force Service Cost Position for the total O&S cost by the nine operational squadrons and further dividing by the number of years covered by the estimate (36 years, from FY96 through FY31). This estimate was done in FY96 constant dollars.

The O&S costs were based on a total of 120 aircraft, of which 96 were operated under the Active/Associate Reserve concept, 6 under the Air Reserve Component Unit Equipped (ARC UE), 8 training aircraft, and 10 in backup inventory. The estimate included direct and indirect costs, as described below.

(1) Direct costs include: mission personnel, unit-level consumables, depot maintenance, Contractor Logistics Support (CLS) and sustaining support costs. Mission personnel consist of aircrew, base maintenance, wing/squadron overhead, and weapon system security personnel requirements. Unit-level consumables include: fuel, base maintenance supplies, and depot-level reparable. Depot maintenance costs capture: airframe overhaul, repair of ground support equipment, and depot support activity. CLS covers the costs of maintaining the engines. Sustaining support includes: replacement support equipment, sustaining engineering, and sustaining software support.

(2) Indirect costs include: personnel support and installation support activities. Personnel support covers medical personnel and supplies, training (aircrew training system contracted support, maintenance trainer contract support, initial C-17 flying training, and initial specialty training), and permanent change of station costs. Installation support covers base operating and real property maintenance personnel, and miscellaneous operating expenses.

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

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

Cost Element	Avg Annual Cost Per C-17 Squadron	Avg Annual Cost for Antecedent System
Mission Personnel	26.3	N/A
Unit-Level Consumables	47.6	N/A
Depot Maintenance	2.7	N/A
Contract Logistics Spt	2.6	N/A
Sustaining Support	2.2	N/A
Indirect Support	23.5	N/A
Total	104.9	N/A

The above costs were derived directly from the FY96 Air Force Service Cost Position, which was based on a 120 aircraft program.

The dollars represent an average O&S cost and do not reflect the way the program would be budgeted. The mission personnel category captures the Active Duty, Associate Reserve and ARC UE mission-related manpower requirements. The required manpower and aircraft operating costs for the eight training aircraft are captured under the indirect support category.

There is no antecedent system for the C-17 program. The C-17 has a much wider range of capabilities than exists in the current airlift aircraft. It can carry outside cargo similar to the C-5, airdrop similar to the C-141, and operate in small austere environments similar to the C-130.

c. Contractor Support Costs -- None.

The costs associated with the interim contractor support contracts are under the acquisition portion of the estimate. For estimating purposes, the engines were treated as being under a contractor support concept.

AF-6 DMSP

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: DMSP

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
DMSP Block 5D-2 Improved/5D-3/Defense Meteorological
Satellite Program

SAF/PAS

96-270 - T

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

DMSP Office	Col Norton B. James III
SMC/CI	Assigned: December 4, 1995
2420 Vela Way Suite 1467-A8	AV 833-4333 COMX (310) 336-4333
Los Angeles AFB, CA 90245-4659	

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

RDT&E:
PE 0305160F

PROCUREMENT:
APPN 3020 ICN MS0554 (Air Force)
APPN 3080 ICN 833340 (Air Force)

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FOR OPEN PUBLICATION
AS AMENDED

MAR 26 1996 18

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

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96-C-0382

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

MILCON:

FE 0305160F

5. (U) Related Programs:

National Polar Orbiting Operational Environmental Satellite (NPOESS)

6. (U) Mission and Description:

The mission of the Defense Meteorological Satellite Program (DMSP) is to provide an enduring and survivable capability, through all levels of conflict consistent with the survivability of the supported forces, to collect and disseminate global visible and infrared cloud data and other specialized meteorological, oceanographic, and solar-geophysical data required to support worldwide DoD operations and high-priority programs. Timely data are supplied to Air Force Global Weather Central, the Navy Fleet Numerical Oceanography Center, the Air Force Space Forecast Center, and to deployed tactical terminals worldwide. The DMSP system is the only DoD meteorological satellite system. It consists of two three-axis stabilized satellites in 450 nautical mile sun-synchronous polar orbits (98.7 degrees inclination), command readout stations, command and control facilities, strategic data processing facilities, worldwide fixed and mobile tactical terminals, and communication satellite links. The DMSP Block 5D-2 Improved (S11-14)/5D-3 (S15-20) systems replace the Block 5D-2 system. Three Block 5D-2 Improved satellites are operational.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Defense Meteorological Satellite Program is a Joint-Service program in accordance with the Memorandum of Agreement on Joint Service Management and Operations, dated 15 Dec 76. The program is a continuing program to support requirements of the special strategic missions, the Joint-Service mission, and the Joint Chiefs of Staff. In Sep 83, DMSP awarded a multiyear procurement contract for 5D-2 Improved spacecraft S11-S14; delivery of the satellites was completed in Nov 90. In Nov 91, satellite F-11 (S-12) was launched from Vandenberg AFB; satellite F-12 (S-11) was launched in Aug 94 and satellite F-13 (S-13) in Mar 95. In FY85 Headquarters Air Force directed the procurement of S-15. A contract for 5D-3 development spacecraft (S-15) was awarded in Jul 86; S-15 was delivered in Dec 91. Congress approved the multiyear procurement of five 5D-3 spacecraft in Sep 88; the contract was awarded in Jun 89. A multiyear procurement contract for four Operational Linescan Systems (OLS) was awarded in Jan 84; delivery of the sensors was completed in May 89. In Sep 88, a contract for five 5D-3 OLSs was awarded; delivery of the sensors was completed in Apr 95. Congress approved transition from Atlas to Titan II with Titan II initial launch capability in Oct 90.

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7a. (U) Program Highlights (Cont'd):

Four Special Sensor Microwave Imager (SSM/I) and one Special Sensor Magnetometer (SSM) were delivered in CY89. In Mar 89, a contract for the Special Sensor Microwave/Imager Sounder (SSMIS) was awarded; Critical Design Review (CDR) was completed in Sep 91. In Aug 94, a Request for Equitable Adjustment (REA) from Aerojet was received. A Special Sensor Ultraviolet Spectrographic Imager (SSUSI) was delivered in Mar 94 for S-16, and a Special Sensor Ultraviolet Limb Imager (SSULI) was delivered in Oct 94. Precipitating Particle Spectrometers (SSJ4/5) were delivered in Oct 93 and Jan 95 and a Plasma Monitoring System (SSIES-3) was delivered in Dec 93. In Mar 94, the Special Sensor Magnetometer #2 & #3 were delivered for integration onto satellites S-17 and S-18 and the Special Sensor Laser Threat Detector (SSP) was delivered; S-11/F-12 was launched from Vandenberg AFB in Aug 94. Block 5D-3 Laser Threat Detection Sensors (SSP) were delivered in Dec 93 and May 94.

In Jan 86, the Fairchild Satellite Operations Center (FSOC) contract was awarded. The Satellite Data Handling System (SDHS) was turned over to Air Force Global Weather Central (AFGWC) in FY86; a contract for SDHS shared processing was awarded in Sep 88. The DMSF Integrated Weapon System Management (IWSM), Single Manager, Concept of Operations (CONOP) was signed in Jun 93. The DMSF IWSM Implementation Plan was approved on 22 Dec 93.

The contract for Mark IVB Tactical Terminals was awarded in Oct 88; IOT&E was completed in May 92. The production option for six fixed Mark IVB systems was exercised on 19 Jun 92. Three Mark IVBs were turnovered to the sites in FY94; the Guam Mark IVB, the Kadana AFB Mark IVB and Elmendorf AFB Mark IVB. Delivery of all terminals was completed in Apr 95. In Nov 90, two contracts for the procurement of Rapid Deployment Imagery Terminals (RDIT) were awarded; deliveries were completed in Jun 91. Two contracts for the development of a Small Tactical Terminal were awarded in Dec 92; a low rate production contract was issued in Jun 94 with first delivery in Jan 95.

b. (U) Significant Developments Since Last Report --

On 6 Jan 95, the Operational Linescan System (OLS) Follow-on Support and Service RFP was released; contract awarded to Westinghouse Electric Corporation in May 95. On 13 Jan 95; the Special Sensor Precipitating Electron Spectrometer (SSJ4) for S-13 was delivered; the Special Sensor Ion Electron spectrometer (SSIES)3 was delivered for S-16 on 15 Feb 95. On 9 Jun 95, IOT&E was completed for the Small Tactical Terminal (STT). The contract option for full rate production was exercised in Sep 95. On 24 Mar 95, the F-13 Spacecraft was successfully launched from Vandenberg AFB on the last Atlas E booster in the Air Force inventory. On 5 Apr 95, the Lajes Field Mark IVB was

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7b. (U) Program Highlights (Cont'd):

delivered. The last of five OLS production units was delivered in Apr 95. In Jul 95, the SSMIS Independent Review Team (IRT) briefed its findings to SAF/AQ. The Special Sensor Ultraviolet Spectrographic Imager (SSUSI) was delivered on 13 Sep 95 for S-17 spacecraft. The Special Sensor Ultraviolet Limb Imager (SSULI) was delivered on 14 Sep 95. On 19 Oct 95, Version 6 software Formal Checkout Qualification Testing was completed. The revised spacecraft delivery schedule was successfully negotiated on 19 Dec 95. On 21 Dec 95, Aerojet, the SSMIS contractor, submitted an updated claim for \$94M (compared to \$40+M in Aug 94).

The DMSF is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --

The Special Sensor Ultraviolet Limb Imager (SSULI) was delivered on 7 Feb 96 for the S-17 spacecraft. A Small Tactical Terminal (STT) unit was delivered to Bosnia to aid the troops in their peace-keeping mission.

8. (U) Threshold Breaches:

There is a cost breach against the AFAS Acquisition Program Baseline (APB) dated 5 January 1993. The breach is due to the addition of four years of program support. A program deviation report and baseline change request has been submitted. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
SATELLITE			
Block 5D-2 Improved Production Start (S-11)	SEP 83	SEP 83	SEP 83
S-15 Design Contract Award	NOV 85	N/A	JUL 86
Satellite Delivery			
S-11	JUL 87	DEC 88	DEC 88
S-12	N/A	NOV 89	OCT 89
S-13	N/A	AUG 90	AUG 90
S-14	N/A	NOV 90	NOV 90
S-15 (Block 5D-3)	N/A	SEP 91	DEC 91
Satellite Availability			
S-11	N/A	DEC 89	DEC 88
S-12	N/A	SEP 90	OCT 89

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

(U) Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
S-13	N/A	JUN 91	AUG 90
S-14	N/A	JUN 92	NOV 90
S-15 (Block 5D-3)	N/A	SEP 93	DEC 91
Award of Block 5D-3 Multiyear Procurement	N/A	MAY 89	JUN 89
Initial Titan II Capability IOC 2/	N/A	OCT 90	OCT 90
Block 5D-2 Improved (S-11)	TBD	N/A	DEC 91
Block 5D-3 (S-15)	TBD	N/A	TBD
PRIMARY SENSOR			
Design Contract Award (S-11)	SEP 82	SEP 82	SEP 82
Production Contract Award (S12-S15)	JAN 84	JAN 84	JAN 84
Production Contract Award (S16-S20)	N/A	SEP 88	SEP 88
S-16 Primary Sensor Delivery	N/A	SEP 92	FEB 93
GROUND SYSTEMS			
Thule Command Readout Station			
(1) Operational	SEP 87	N/A	FEB 88
(2) Deactivate Loring CRS	SEP 88	N/A	APR 90
Fairchild Satellite Operations Center (FSOC) Operational	SEP 87	MAY 89	AUG 89
Award Mark IVB Contract	N/A	OCT 88	OCT 88
Mark IVB IOT&E	N/A	OCT 91	MAR 92
Begin Mark IVB Production	N/A	JAN 92	JUN 92
Final Mark IVB Delivery	N/A	SEP 97	APR 95 (Ch-1)
SYSTEM			
DMSF System Milestone IV	N/A	SEP 97	N/A (Ch-2)

Note: Block 5D-2 Improved/Block 5D-3 IOC will occur 30 days after launch (completion of on-orbit checkout). As DMSF launches on demand, no firm estimate is currently available.

b. (U) Previous Change Explanations --

Fairchild Satellite Operations Center IOC slipped from Sep 88 to May 89 due to delay in contract award. Spacecraft S-15 design contract award slipped from May 86 to Jul 86 when additional technical evaluation of the proposal was required. S-11 delivery slipped from Jul 87 to Dec 88 due to materials problems, late delivery of piece-parts, diversion of manpower to support two launches, and late delivery of Government Furnished Equipment (GFE). Thule Command Readout Station (CRS) slipped from Sep 87 to Feb 88 due to S-Band downlink capability modification. Deactivation of Loring CRS slipped from Sep 88 to Apr 90 by determination of AFSPACECOM. Delivery dates

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

for Spacecraft S12-15 were adjusted due to increased satellite on-orbit lifetime. FSOC Operational slipped from May 89 to Aug 89 due to the non-availability of critical spares. Award of the 5D-3 multiyear contract slipped from Mar 89 to Jun 89 due to protracted negotiations. Satellite Required Availability dates were changed from TBD to the delivery date for each spacecraft since these spacecraft have all been delivered and are available for launch. Satellite S-12 delivered a month ahead of estimate due to efficient test cycle. Delivery of satellite S-15 slipped from Sep 91 to Dec 91 due to manufacturing and test problems. IOC for Block 5D-2 Improved was changed from TBD to Dec 91 when the first satellite in the block became operational. S-16 Primary Sensor delivery slipped from Sep 92 to Nov 92 due to late subcontractor piece parts deliveries; an additional slip to Feb 93 resulted from problems encountered during thermal vacuum test. Begin Mark IVB IOT&E slipped from Sep 90 to Oct 91 due to PMD amendment adding Mission 22 and development problems; a further slip to Mar 92 was due to software integration problems impacting system stability; this delay caused Mark IVB Production Start to slip from Feb 91 to Jun 92 and Final Delivery to slip from Sep 95 to Sep 97. Milestone IV slipped from Sep 93 to Sep 97 due to delay of program. Milestone IV was then accelerated from Sep 97 to Jun 93 due to an Air Force determination that Milestone IV was more appropriately held prior to significant risk reduction activity (FY93) versus prior to Engineering Development (FY97); a further slip from Jun 93 to Jul 95 resulted from the rescheduling of the Air Force Requirements Summit.

c. (U) Current Change Explanations --

(Ch-1) Final Mark IVB delivery changed from Sep 97 to Apr 95 with delivery of the 7th and last Mark IVB tactical terminal.

(Ch-2) The presidentially directed convergence of the existing national environmental weather satellite system into a Department of Commerce and Department of Defense combined satellite system has eliminated the DMSP requirement for a Milestone IV decision for a DMSP Block 6. A deviation report for the removal of Milestone IV has been submitted.

d. (U) References --

(U) Production Estimate:

PMD R-8 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:

AFAR Approved Acquisition Program Baseline dated January 05, 1993.

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10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Satellite					
Altitude (+/-20 nm)	450	N/A	/ N/A	450	450
Inclination (+/- .15 degrees)	98.7	N/A	/ N/A	98.7	98.7
Mean Mission					
Duration (months)					
SD-2 Improved	33	48	/ 30	48	39
SD-3	42	60	/ 30	N/A	42
Early Orbit					
Checkout (days)					
SD-2 Improved	30	30	/ 30	19	30
SD-3	30	30	/ 30	N/A	30
Primary Sensor					
Global Resolution (km)	2.78	2.78	/ 2.78	2.78	2.78
Theater Resolution (km)	.56	.56	/ .56	.56	.56
Mark IV Transportable Tactical Terminals					
Mark IVB Tactical Terminals					
Mean Time Between Corrective Maintenance Actions (MTBCMA) (hrs)	720	705	/ 705	N/A	705
Mean Time to Repair (MTR) (hrs)	1	1	/ 1	N/A	1
Mean Time Between False Alarm (MTBFA) (hrs)	20000	20000	/ 20000	N/A	20000
Mean Time Between Critical Failures (MTBCF) (hrs)	2000	1945	/ 1945	N/A	1945
Maintenance Manhours per Operating Hour (MMH/OH)	.0233	.0233	/ .0233	N/A	.0233
Inherent Availability	.9995	.9995	/ .9995	N/A	.9995
Fraction of Failures Isolated by Built-In Test (†)	90	90	/ 90	N/A	90
Survivability					

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

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)	[Redacted]			
Autonomous Operation (days)	N/A	60 / 7	N/A	7

The Altitude parameter is 450 nautical miles with a difference between apogee and perigee of no more than 30 nautical miles.

The current estimate for the technical parameters represents anticipated values based on current on-orbit satellite performance. Mean mission duration for both the 5D-2 Improved and 5D-3 spacecraft represent anticipated values and are based on current on-orbit performance of similar satellites.

b. (U) Previous Change Explanations --

Previous entry for Early Orbit Checkout allowed up to 90 days in a transfer orbit for Space Shuttle launch; program has transitioned to an ELV. Survivability parameters are included to reflect the Acquisition Program Baseline. Mark IVB data replaced Mark IV data in the 30 Jun 89 SAR. Mean Time Between Corrective Maintenance Actions and Mean Time Between Critical Failures for the Mark IVB system decreased from 720 to 705 hours and 2000 to 1945 hours, respectively, due to the addition of Mission 22. The Block 5D-2 Improved Mean Mission Duration estimate increased from 33 to 39 months based on historical experience with similar satellites.

c. (U) Current Change Explanations --

Due to on-orbit performance data from satellite S-11, the demonstrated performance for Satellite Altitude (nautical miles), Inclination (degrees), and Mean Mission Duration (months) for 5D-2 Improved changed from N/A to 450, 98.7 degrees, and 48 months respectively.

d. (U) References --

(U) Production Estimate:

PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:

AFAB Approved Acquisition Program Baseline dated January 05, 1993.

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

a. (U) Cost --	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	224.5	224.9	253.8
Procurement	491.6	545.0	618.7
Launch Vehicle	(26.0)		(7.2)
Spacecraft	(201.3)		(242.1)
Primary Sensor	(79.6)		(101.8)
Mission Sensors	(57.1)		(85.0)
Support	(48.9)		(75.0)
Total Flyaway	(412.9)		(511.1)
Ground System	(58.0)		(94.6)
Field Level Support	(19.8)		(0.0)
Total Other Wpn Sys	(77.8)		(94.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.9)		(13.0)
Construction (MILCON)	2.6	3.0	2.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 75 Base-Year \$	718.7	772.9	875.2
 Escalation	 1160.3	 1251.1	 1468.2
Development (RDT&E)	(318.1)	(299.6)	(371.6)
Procurement	(839.1)	(948.2)	(1093.6)
Construction (MILCON)	(3.1)	(3.3)	(3.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1879.0	2024.0	2343.4

b. (U) Quantity --			
Development (RDT&E)	1	1	1
Procurement	<u>8</u>	<u>9</u>	<u>9</u>
Total	9	10	10

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Production Estimate:

PMD R-S 3015 (20), dated May 31, 1983, subject "DMSP".

(U) Approved Program:

AFAP Approved Acquisition Program Baseline dated January 05, 1993.

*** UNCLASSIFIED ***

DMSF, December 31, 1995

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (JAN 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY75\$)	875.2	772.9	
(2) Quantity	10	10	
(3) Unit Cost	87.520	77.290	13.24
b. (U) Procurement			
(1) Cost (BY75\$)	618.7	545.0	
(2) Quantity	9	9	
(3) Unit Cost	68.744	60.556	13.52

*** UNCLASSIFIED ***

DMSF, December 31, 1995

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	542.6	1330.7	5.7	1879.0
Previous Changes:				
Economic	-25.3	-116.8	-0.2	-142.3
Quantity	-	+190.2	-	+190.2
Schedule	-	+1.9	-	+1.9
Engineering	-13.6	-70.4	-	-84.0
Estimating	+37.4	+97.8	-	+135.2
Other	-	-	-	-
Support	+35.5	+74.9	+0.2	+110.6
Subtotal	+34.0	+177.6	-	+211.6
Current Changes:				
Economic	-7.8	-25.0	-	-32.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	52.1	191.9	-	+244.0
Other	-	-	-	-
Support	4.5	37.1	-	+41.6
Subtotal	+48.8	+204.0	-	+252.8
Total Changes	+82.8	+381.6	-	+464.4
Current Estimate	625.4	1712.3	5.7	2343.4

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

a. (U) Summary (FY 1975 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCOM	TOTAL
Production Estimate	224.5	491.6	2.6	718.7
Previous Changes:				
Quantity	-	+61.2	-	+61.2
Schedule	-	-	-	-
Engineering	-5.2	-24.8	-	-30.0
Estimating	+4.3	+5.9	-	+10.2
Other	-	-	-	-
Support	+13.2	+18.6	+0.1	+31.9
Subtotal	+12.3	+60.9	+0.1	+73.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	15.5	55.9	-	+71.4
Other	-	-	-	-
Support	1.5	10.3	-	+11.8
Subtotal	+17.0	+66.2	-	+83.2
Total Changes	+29.3	+127.1	+0.1	+156.5
Current Estimate	253.8	618.7	2.7	875.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Developed satellite autonomy capability; added new wind sensor technology effort but requirement later withdrawn; de-scoped survivability of 5D-3 spacecraft (S-15); increased vacuum ultraviolet (SSUV) sensor development authorized, but authority later withdrawn.

Estimating: Adjustments to correct current & prior year escalation; adjustments to current & prior years to reflect actuals; definitized Titan II ELV contract as 5D-3 booster; definitized 5D-3 development spacecraft (S-15) contract; re-estimate of 5D-3

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

development effort and performance incentives; adjustment of on-orbit performance incentives for projected launch date; additional development for wind measuring sensor; reduction resulting in delay of spacecraft (S-15) and primary and missions sensors and decrease in technical support; added funding for Titan II launch vehicle integration; revised estimate for spacecraft and sensor support and service effort; revised estimate of sensor calibration/validation costs; decreased estimate of program management and technical support; increase for system engineering; decrease in spacecraft and sensor studies; revised estimate for microwave imager/scounder development; extension of support and service activities for two years due to delay of follow-on program.

Support: Increase in Automated Weather Product Driver System application; deleted Shuttle-Launch Base requirement; upgrade of deployed DMSF tactical terminals and development of a new combat tactical terminal added; increase to C3 and DMSF tactical terminal upgrade requirements; revised estimate for development of new combat tactical terminal; increased cost for launch and on-orbit checkout for spacecraft S-15 and related launch and on-orbit costs; adjustment to Mark IVB development effort; adjustment to tactical terminal development estimate due to design problems; launch facility improvements due to space policy security requirements; revised estimate of launch facility improvement costs; revision to system engineering support for ground systems; revised estimate of ground system engineering studies; reprioritization of Tactical Data Processing requirements by user; re-estimate of small tactical terminal development.

Procurement

Economic: Revised escalation indices.
Quantity: Add one 5D-3 satellite (S-20) due to extension of Block 5D-3 program.
Schedule: Restructure of multiyear procurement of Block 5D-3 spacecraft S16-20.
Engineering: Descoped survivability and added classified sensor to S16-20 spacecraft; added requirement for solar x-ray imager sensor (SXI); funding for SXI withdrawn.
Estimating: Adjustments to correct current and prior year escalation; adjustments to current & prior years to

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

reflect actuals; funding reallocated to complete spacecraft S8-10 which are not included in SAR; extension of 5D-3 program; transition to Titan II ELV as 5D-3 booster; funding for Titan II launch vehicle refurbishment for DMSF S16-20 transferred to Space Boosters Program (PE 35119F); fully funded buy of S16-20 and associated primary sensors restructured as a multiyear procurement; revised estimate of OLS and spacecraft (for S16-20) using Jun 85 cost data; upgraded production/test equipment model for primary sensor (OLS 13-21); integration funding for this added in FY 87; descope merger of two mission sensors and re-estimated mission sensor mix in Jun 85 for S16-20; acceleration of water vapor profiling capability; loss of advance material buy funding for primary sensor; restructure of primary sensor buy from multiyear procurement to fully funded annual buy; revised estimate for technical support and mission sensor contingency; refinement of estimate for restructuring multiyear procurement of Block 5D-3 spacecraft S16-20; definitization of procurement of primary sensor OLS 17-21; re-estimate of special sensor buy as a competitive procurement; refinement of estimate for procurement of space and environmental sensors; definitization of multiyear procurement of spacecraft S16-20; adjustment of spacecraft and primary sensor incentives to projected year of payment; extension of Block 5D program due to follow-on delay; directed transfer of support and launch effort funding from operations and maintenance to missile procurement.

Support:

Adjustments to correct current and prior year escalation; adjustments to current and prior years to reflect actuals; refinement of Multi-Purpose Satellite Operations Center (MPSOC) upgrade requirement; revised estimate of initial spares requirement; increased cost for replacement of out-dated site equipment; definitization of DMSF tactical terminal upgrade requirements; tactical terminal cost growth; re-estimate for DMSF connectivity to New Hampshire tracking station; reprogramming of spares funding; refined estimate for Mark IVB site prep/shelter procurement; revised estimate for replacement of site equipment using off-the-shelf equipment; revised estimate of Small Tactical Terminal procurement including revised

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

user requirements; adjustment to FFRDC funding; directed transfer of ground system support efforts from operations and maintenance to missile procurement.

MILCON

Economic: Revised escalation indices.
Support: Adjustments to correct current and prior year escalation; adjustments to prior year to reflect actuals.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation rates. (Economic)	N/A	-7.8
Current and prior year adjustment for escalation. (Estimating)	+0.5	+1.5
Revised estimate to reflect current and prior year actuals (Estimating)	-1.6	-4.5
Re-estimate of spacecraft & sensor support activities to include FY02-05 due to change in direction for follow-on effort. (Estimating)	+18.3	+60.2
Revised estimate for spacecraft sensor system engineering support. (Estimating)	-1.7	-5.1
Re-estimate of ground segment support to include FY02-05 due to change in direction for follow-on effort. (Support)	+0.5	+1.6
Revised estimate of tactical terminal algorithm development. (Support)	+1.0	+2.9
RDT&E Subtotal	<u>+17.0</u>	<u>+48.8</u>
(2) <u>Procurement</u>		
Revised economic escalation rates. (Economic)	N/A	-25.0
Adjustment to current and prior year escalation. (Estimating)	+1.3	+3.6
Revised estimate to reflect current and prior year actuals. (Estimating)	-1.2	-3.7
Reprogramming to fund on-orbit performance incentives. (Estimating)	+10.1	+28.6

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Four years added to the program (FY02-05) due to change in direction for follow-on effort. (Estimating)	+40.2	+145.6
Revised estimate of spacecraft and sensor factory field support to include storage and annual testing. (Estimating)	+5.5	+17.8
Re-estimate of ground segment support to include FY02-05 due to change in direction for follow-on effort. (Support)	+11.7	+40.6
Adjustment to current and prior year escalation. (Support)	+0.5	+1.6
Revised estimate to reflect current and prior year actuals. (Support)	-0.3	-0.6
Revised estimate for ground system factory field support. (Support)	+0.1	+0.5
Revised estimate of initial spares. (Support)	+0.7	+2.4
Revised estimate of Small Tactical Terminal production due to budget limitations. (Support)	-2.4	-7.4
Procurement Subtotal	<u>+66.2</u>	<u>+204.0</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
208.78	-17.51	-1.86	0.19	-8.40	37.92	--	15.22	25.56	234.34

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

a. (U) RDT&E --	Initial Contract Price		
(U) SSMI/S:	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Aerojet ElectroSystems Co, Azusa, CA	\$62.1	\$66.3	3
FO4701-89-C-0036, FPIF/CP			
Award: March 17, 1989			
Definitised: March 17, 1989			

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

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.2	\$115.2	5	\$115.2	\$115.2
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-40.8	\$-4.1
Cumulative Variances To Date (12/31/95)			\$-53.4	\$-2.8
Net Change			\$-12.6	\$1.3

Explanation of Change:

Program Manager estimated price at completion decreased due to the contractor's failure to earn the award fee available during this period. The estimated price at completion includes both the fixed price production effort and the cost plus development effort on the contract. The estimated price for the fixed price portion is constrained by the ceiling of \$72.6M which is the limit of the government's liability on the production effort. Also included in the estimated price at completion is \$0.6M in award fees earned, \$2.0M in potential award fees, and \$4.3M in potential on-orbit performance incentives. Neither award fees nor incentives are included in the current contract price data.

Increase in cost variance is due to costs associated with the schedule extension for flight unit deliveries. Additional contributors are: extensive anomaly resolutions due to failures uncovered during EMI/EMC, rework costs associated with calibration, mixer failures and problem resolution and implementation.

The contract is currently funded to ceiling price. The contractor has encountered numerous test failures during integration. The program office is continually working with the program integrator to reduce the impact of late sensor delivery to satellite integration. The contractor has submitted an updated certified Request for Equitable Adjustment (REA) to the government for over \$94.0M dollars. The government is currently evaluating the claim. Schedule variance improved due to incorporation of new delivery date and replan of associated efforts.

There is minimum impact to the program at this time.

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

h. (U) Procurement --
 (U) 5D-3 OLS:
 Westinghouse Elec Corp, Baltimore, MD
 F04701-88-C-0118, FPIF/AF
 Award: September 19, 1988
 Definitized: September 19, 1988

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$110.7	\$123.2	5	\$105.0	\$105.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-5.0	\$-1.5
Cumulative Variances To Date (05/28/95)			\$-0.3	\$0.0
Net Change			\$4.7	\$1.5

Explanation of Change:

The change to the current contract target price and ceiling price is due early delivery of the last OLS unit.

Program Manager estimate decreased to reflect last unit delivery.

Included in the estimate price at completion is \$4.4M award fees earned, \$0.9M in potential award fees, and \$7.3M in potential on-orbit performance incentives.

The cost and schedule variance improved due to resolution of test problems with OLS 20.

There is no impact to the program.

THIS CONTRACT WILL NO LONGER BE REPORTED IN THE SAR. ALL SENSOR UNITS HAVE BEEN DELIVERED.

(U) 5D-3 SPACECRAFT:
 Lockheed Martin, Princeton, NJ
 F04701-89-C-0029, FPIF/AF
 Award: June 30, 1989
 Definitized: June 30, 1989

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$302.1	\$328.6	5	\$302.1	\$330.4

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.9	\$-22.6
Cumulative Variances To Date (12/31/95)	\$-12.4	\$-14.1
Net Change	\$-13.3	\$8.5

Explanation of Change:

The increase to the current contract target and ceiling prices over the original values is due to contract modifications for mission sensor integration, the advanced flight vehicle simulation facility, real-time data smooth transmitters and award fee/orbital incentives.

The Program Manager's estimate at completion exceeds target price based upon Cost Performance Report (CPR) indicators, and chronic problems associated with solar arrays, power supply electronics (PSE), and batteries. Problems with power supply electronics, which previously caused the majority of schedule delays (including the need to replan the schedule), have been solved. Lingered solar array qualification problems, however, have yet to be completely overcome and threaten to further delay spacecraft integration and test schedules. Acknowledging the significant amount of time these spacecraft are expected to remain in storage before launch, the SPO has developed a well thought out limited shelf life strategy. Extended procurement and delivery dates for Pyrotechnic devices, Apogee Kick Motors (AKMs) and batteries have all been carefully planned to minimize "aging out". The estimated price at completion includes \$3.7M in award fees earned, \$7.5M in potential future awards, and \$16.9M in potential on-orbit performance incentives.

The decrease in cost variance has two primary causes. The first involves the expensive repair and rework of sub-system components such as Reaction Wheel Assemblies (RWA), transmitters, solar arrays, batteries and S16 PSE. The second, however, involves a granularity problem between point of receipt of material goods and their point of issue to the manufacturing floor. Most of this problem has been addressed as part of the schedule replan concluded on 19 Dec 95.

The negative schedule variance improved significantly due to the large number of materials released to the manufacturing floor. Subsystem manufacturing has also been intentionally accelerated in order to take full advantage of future manpower savings coincident with plant closure.

There is minimum impact to the program at this time.

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

a. (U) Program Status --

- (1) Percent Program Completed: 62.5% (15 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 75.8% (\$1776.4 / \$2343.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2005)	Total
RDT&E	449.0	19.9	18.0	138.5	625.4
Procurement	1258.5	43.3	40.2	370.3	1712.3
MILCON	5.7	-	-	-	5.7
O&M	-	-	-	-	-
Total	1713.2	63.2	58.2	508.8	2343.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

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

1982				8.4	15.5	15.5	15.5	9.2
1983				8.7	16.8	16.8	16.8	4.9
1984				9.8	19.6	19.6	19.6	3.8
1985				18.4	37.9	37.9	37.9	3.4
1986				24.1	50.9	50.9	50.9	2.8
1987				26.6	58.8	58.8	58.8	2.7

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1988				16.0	36.3	36.3	36.3	3.0
1989				19.0	45.3	45.3	45.3	4.2
1990				17.9	44.0	44.0	40.2	4.0
1991				17.8	45.2	45.2	45.2	4.3
1992				9.6	25.1	25.1	25.1	2.8
1993				6.4	17.2	17.2	16.3	2.7
1994				6.9	18.8	18.8	16.2	2.0
1995				6.5	17.6	17.6	10.0	1.9
1996				7.1	19.9	9.9	0.1	2.0
1997				6.3	18.0			2.2
1998				5.8	16.9			2.3
1999				6.6	19.6			2.2
2000				6.8	20.6			2.2
2001				6.3	19.7			2.2
2002				5.6	17.8			2.2
2003				4.4	14.2			2.2
2004				4.4	14.6			2.2
2005				4.4	15.1			2.2

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

Subtot	1			253.8	625.4	458.9	434.2	
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Funding does not match the budget documentation because the SAR is limited to DMSF Blocks 5D-2 Improved and 5D-3.

Base year dollars were computed using DMSF peculiar indices for FY82-94 and OSD Standard Indices for FY95-05.

Obligation and Expenditure information reflects official accounting records as of 27 Feb 96.

Appropriation: 3020 Missile Procurement, Air Force

1982				7.0	14.4	14.4	14.4	9.6
1983	2	3.8	65.1	68.8	150.7	150.7	150.7	9.0
1984		3.7		13.3	30.3	30.3	30.3	8.0
1985	2	4.2	85.6	54.3	127.6	127.6	127.6	3.4
1986		4.0	17.1	16.1	39.5	39.5	39.5	2.8
1987		3.6		6.9	17.5	17.5	17.5	2.7
1988		2.7		27.2	72.3	72.3	72.3	3.0
1989	1	2.7	62.1	58.7	162.8	162.8	132.8	4.2
1990	1	5.2	56.3	43.4	122.8	122.8	112.8	4.0
1991	1	5.2	54.0	56.8	165.7	165.7	127.7	4.3

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1992	2	4.8	103.4	35.1	103.7	103.7	56.6	2.8
1993		3.1		10.1	30.8	30.8	29.0	2.7
1994		2.1		9.9	30.9	30.9	25.4	2.0
1995		1.7		9.5	28.9	28.9	13.6	1.9
1996		2.1		9.0	27.9	27.9	0.1	2.0
1997		2.2		8.8	27.9	27.9		2.2
1998		2.2		10.1	32.8	32.8		2.3
1999		2.2		9.8	32.4	32.4		2.2
2000		2.1		9.9	33.5	33.5		2.2
2001		2.0		10.2	35.3	35.3		2.2
2002		1.9		11.0	38.7	38.7		2.2
2003		2.1		11.1	39.9	39.9		2.2
2004		2.0		9.7	35.9	35.9		2.2
2005		1.9		9.6	36.0	36.0		2.2
Subtot	9	67.5	443.6	516.3	1438.2	1438.2	950.3	

Funding does not match the budget documentation because the SAR is limited to DMSF Blocks 5D-2 Improved and 5D-3.

Base year dollars were computed using DMSF peculiar indices for FY82-94 and OSD standard Indices for FY95-05.

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

Obligation and Expenditure information reflects official accounting records as of 27 Feb 96.

Appropriation: 3080 Other Procurement, Air Force

1983				3.7	7.5	7.5	7.5	4.9
1984				6.3	13.1	12.6	12.6	2.7
1985				13.3	28.7	25.7	25.7	4.5
1986				4.1	9.3	4.9	4.9	2.8
1987				3.0	6.9	5.1	6.1	2.7
1988				4.3	10.4	8.8	8.8	3.0
1989				6.5	16.3	15.0	15.0	4.2
1990				0.5	1.2	0.8	0.8	4.0
1991				7.1	18.7	17.5	15.2	4.3
1992				2.9	7.9	6.5	3.4	2.8
1993				4.7	13.1	9.9	1.7	2.7
1994				4.2	12.1	8.4		2.0
1995				5.5	15.4	1.2		1.9
1996				5.4	15.4			2.0
1997				4.2	12.3			2.2
1998				4.8	14.4			2.3
1999				4.9	15.1			2.2
2000				3.6	11.3			2.2
2001				2.9	9.3			2.2
2002				2.9	9.5			2.2

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

Fiscal Year	Qty	Flyaway FY75 Dollars		Total Base Year\$	Total Than-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

2003				1.4	4.8		2.2
2004				3.1	10.5		2.2
2005				3.1	10.9		2.2
Subtot				102.4	274.1	123.9	101.7

Funding does not match the budget documentation because the SAR is limited to DMSP Blocks 5D-2 Improved and 5D-3.

Base year dollars were computed using DMSP peculiar indices for FY82-94 and OSD Standard Indices for FY95-05.

Obligation and Expenditure information reflects official accounting records as of 27 Feb 96.

Appropriation: 3300 Military Construction, Air Force

1985				2.7	5.7	5.7	5.7
Subtot				2.7	5.7	5.7	5.7
Grand Total	10	67.5	443.6	875.2	2343.4	2026.7	1491.9

DMSF, December 31, 1995

17. (U) Production Rate Data:

- a. (U) Deliveries to Date --
- | | |
|-------------|--------------------|
| RDT&E | <u>Plan/Actual</u> |
| Procurement | 1/1 |
| | 4/4 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

Operations and support costs include all costs of operating, maintaining, and supporting the DMSF spacecraft from dedicated ground control centers at Fairchild AFB WA (Fairchild Satellite Operations Center) and Offutt AFB NE (Multi-Purpose Operations Center). Costs also include the costs for contractor support for sustaining engineering and the operations personnel at each of the operations centers. These costs do not include the unallocated costs associated with the shared use of remote tracking stations which are programmed and borne by the Air Force Satellite Control Network and the Consolidated Space Operations Center program elements.

- b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 5D-2 Constellation	Avg Annual Cost Per (Antecedent)
Operations & Maintenance	11.2	N/A
Military Personnel	13.1	N/A
Other Procurement	2.4	N/A
Total	26.7	N/A

No antecedent system for the Block 5D-2 Improved/5D-3 meteorological satellite exist.

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

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	124.4	---	---	---	124.4
Total	124.4	---	---	---	124.4

The O&M Support Costs include funding for sustaining engineering and launch for satellites S-11 through S-20 beginning with the delivery of S-11 in FY 1989 and estimated through FY 2000. Beginning in FY 1993, higher headquarters approved the transfer of funding for sustaining engineering and launch to the Missile Procurement appropriation.

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

PROCUREMENT:

APPN 3020 ICN MS0647 (Air Force)

APPN 3080 ICN 833100 (Air Force)

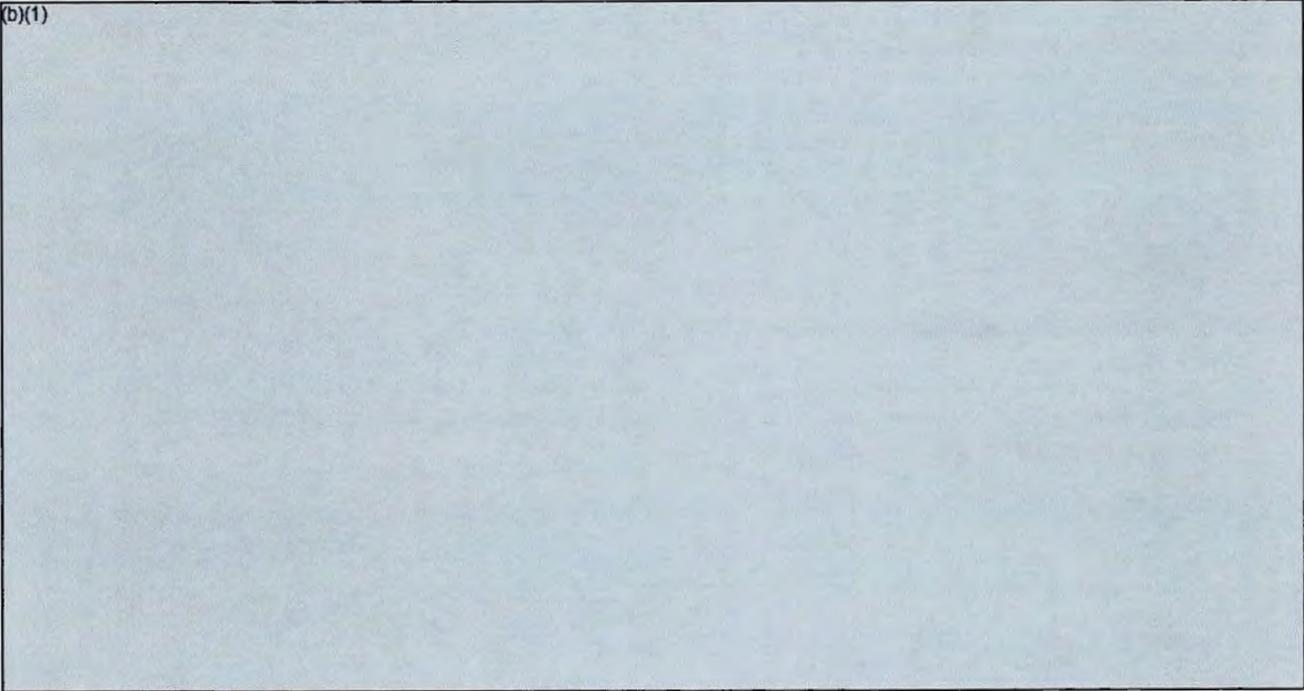
MILCON:

PK 0102431F, 0305911F

5. (U) Related Programs:

Jam Resistant Secure Communications Terminals (JRSCT); Military Satellite Communications System (MILSATCOM); Survivable Communications Integrated System (SCIS); Titan IV; Inertial Upper Stage (IUS); Attack and Launch Early Report to Theater (ALERT)/Talon Shield; Space Based Infrared System (SBIR) High and Space and Missile Tracking System (SMTS).

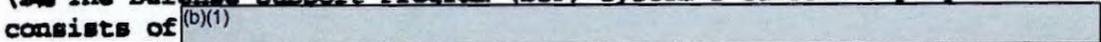
(b)(1)



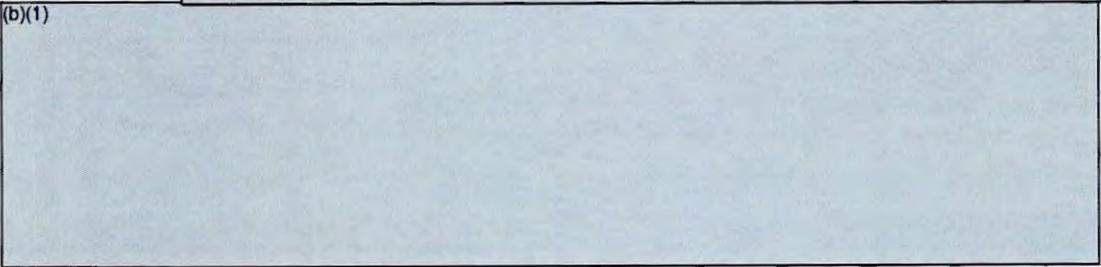
7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(U) The Defense Support Program (DSP) system's current deployment consists of (b)(1)



(b)(1)



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7a. (U) Program Highlights (Cont'd):

worldwide.

(U) In 1986, Flight 13 was demated from the Titan 34D booster due to the booster investigations caused by the previous booster disasters, the first time any satellite had been demated from its booster.

(U) The fixed ground stations have been modified with the Large Processing Stations Upgrade (LPSU) main computer replacement and the Peripheral Upgrade Program (PUP). The CGS accepted the PUP equipment in Apr 87 and the OGS in Sep 87.

(b)(1)



(U) Starting with Flight 12 in December 1984, all sensors have undergone Sensor Evolutionary Development (SED) improvements intended to prolong useful life, increase survivability, increase the viewing area, and increase the accuracy of each Satellite.

(U) The SPO has turned over to Air Force Space Command (AFSPC) all Mobile Ground Systems (MGS).

(U) The Central Tactical Processing Program (CTPP) was formed to support the Talon Shield Program and exploit tactical performance capabilities. The Data Control Subsystem (DCS) for Satellite 16 began working operationally in Feb 92. The Upgraded Mobile Ground Terminals 3 and 4 were delivered in Aug 1992.

(U) The System 1 Research, Development, Test & Evaluation (RDT&E) and the System 1 Delivery to CGS (Shelter Installation) contract was terminated for convenience by the government on 15 Dec 92.

(U) The DSP Program Office consolidated with the Follow on Early Warning System (FEWS) Program Office to form the new Space Based Early Warning System Program Office in Apr 93.

(U) DSP awarded a contract for a multi-year procurement of Satellites 23-25 in FY93.

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7a. (U) Program Highlights (Cont'd):

(U) The Satellite Readout Station Upgrade (SRSU) contract has been restructured to accommodate additional Government test and acceptance activities. Testing was stopped 26 Jun 93 due to several deficiencies.

(U) The Laser Crosslink System was terminated due to the change of requirements by the user, Air Force Space Command (AFSPC).

(U) The Mobile Ground Systems delivered Mobile Ground Terminal's 5 and 6 to the site on 8 Sep 93.

(U) The build version of 9.0 software for the Talon Shield Central Tactical Processing Element has been completed and was installed at the National Test Facility (NTF). Full system testing was completed on 27 Jan 94.

(U) Based on AFSPC direction, in the spring of 1991 launch dates were extended from 6 month to 12 month centers, which necessitated the Block 18 restructure. The original Multi-year procurement contract was for six month launch centers.

(U) The changes to the Acquisition Program Baseline (APB) were approved and signed 30 Mar 94 by the Service Acquisition Executive (SAE). The changes made were the termination of the Laser Crosslink and the Satellite Readout Station Upgrade (SRSU) Installation and Checkout (I&C) schedule milestones.

(U) Due to budget reduction and program requirement changes, Satellites 24 and 25 were cancelled on 11 Mar 94 and 30 Jun 94 respectively. As a result of the cancellation, Aerojet delivered a Request for Equitable Adjustment (REA) Proposal for Sensor 23 on 22 Dec 94. Aerojet claimed that with the cancellation of Sensor 24 and 25, they were unable to complete Sensor 23 with the funds remaining on contract. Aerojet submitted an additional proposal on 5 Jan 95. This proposal was a complete bottoms up proposal for production of Sensor 23.

(U) AFSPC declared the SRSU Continental United States (CONUS) Ground Stations's antenna #2 operational on 22 June 1994.

(U) On 22 Dec 94, DSP Flight 17 was launched by the 45 Space Wing from Cape Canaveral AFS, FL.

(U) Attack and Launch Early Report to Theater (ALERT) Initial Operating Capability (IOC) slipped to late February 95 due to problems with the software operating system and the fiber optic Local

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7a. (U) Program Highlights (Cont'd):

Area Network (LAN). This problem has since been rectified.

b. (U) Significant Developments Since Last Report --
Flight 17 Early On-Orbit Testing was successfully completed on 15 Jan 95 and was moved to its operational location.

The Satellite Readout Station Upgrade (SRSU) program achieved a major milestone with the completion of Operational Test and Evaluation (OT&E). The program then declared Initial Operational Capability at the COMUS Ground Station (CGS) in May 95 and CGS System turnover in Jun 95.

The Advanced Radec Data Unit (ARDU) entered a trial period at CGS on 27 Jun 95 and completed the trial period on 18 Jul 95. An operational board was held on 18 Jul 95 and the board approved the system for operational use at CGS. The Overseas Ground Station (OGS) ARDU installation was completed in April 95, and OGS Development Test and Engineering (DT&E) started in late Aug 95.

On 19 Aug 94, SAF/FMBI, through OSD Comptroller direction, rescinded the OSD policy of Jul 92 allowing funding of on-orbit incentive fees for Satellites 18-22 in the year which they were earned. The Block 18 contract restructure was planned using the former DoD policy. As a result, the System Program Office (SPO) requested and obtained additional obligation authority for the incentives in the original year of funding. These funds will cancel prior to being earned by the contractors and will have to be budgeted for again in the year of need.

The Talon Shield/Attack and Launch Early Warning to Theater (ALEXT) program awarded the follow-on contract for Operations and Maintenance (O&M) and development, 28 Sep 95. Using a streamlined solicitation process, the team released Requests for Proposals (RFPs) to industry and awarded the contract almost 3 months faster than the traditional approach. Between Nov - Dec 95 we conducted 3 post-award conferences in which we included our customers and detailed the Integrated Master Plan and Schedule during the same period. The result has been a greater cooperative environment between the SPO, contractor, and customer.

The DSP system is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --
An \$11.5M contract modification for 4 Satellite Readout Station Upgrade (SRSU) Requests for Equitable Adjustment (REAs) were issued on 8 Feb 96. This completes a two year effort to restructure the SRSU contract. A modification for the Block 23 Sensor REA was issued on 20

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7c. (U) Program Highlights (Cont'd):

Feb 96 to reconcile the effect of canceling Satellites 24 and 25. In the process, \$53M was reprogrammed to this effort, while \$20M was saved during negotiations.

8. (U) Threshold Breaches:

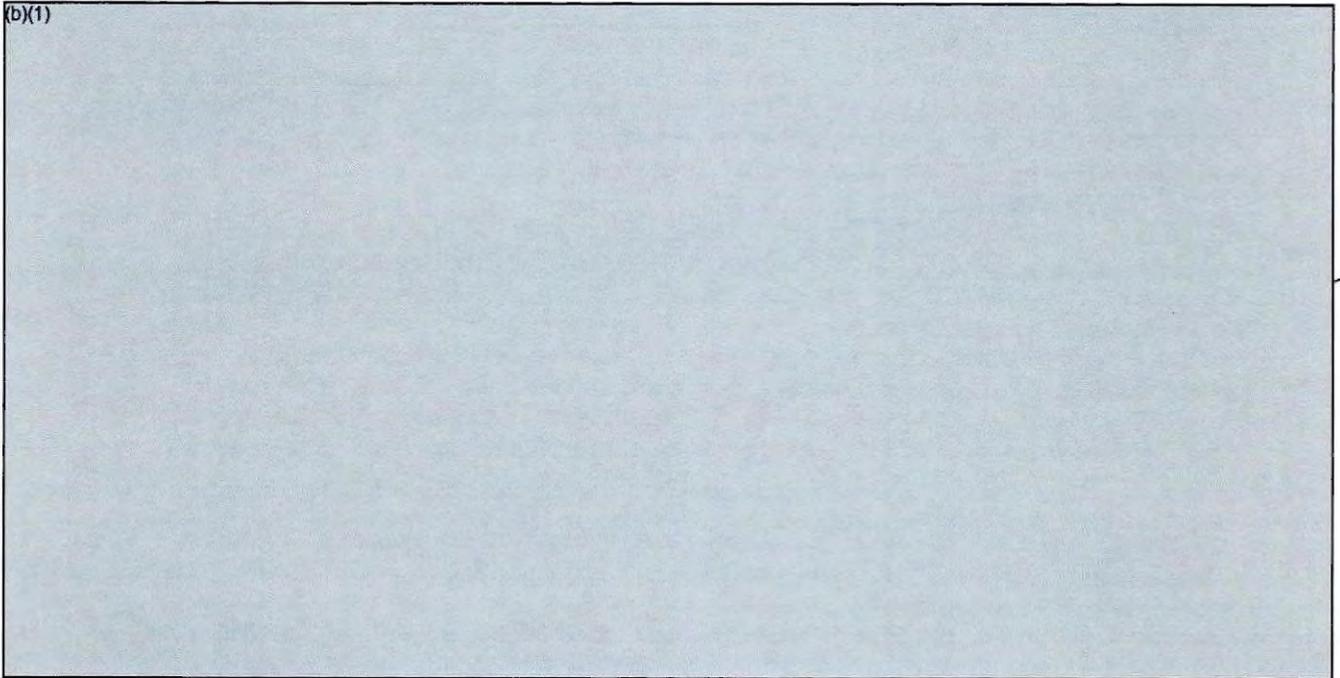
There are no cost or schedule breaches to the AFAE Acquisition Program Baseline (APB) and no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

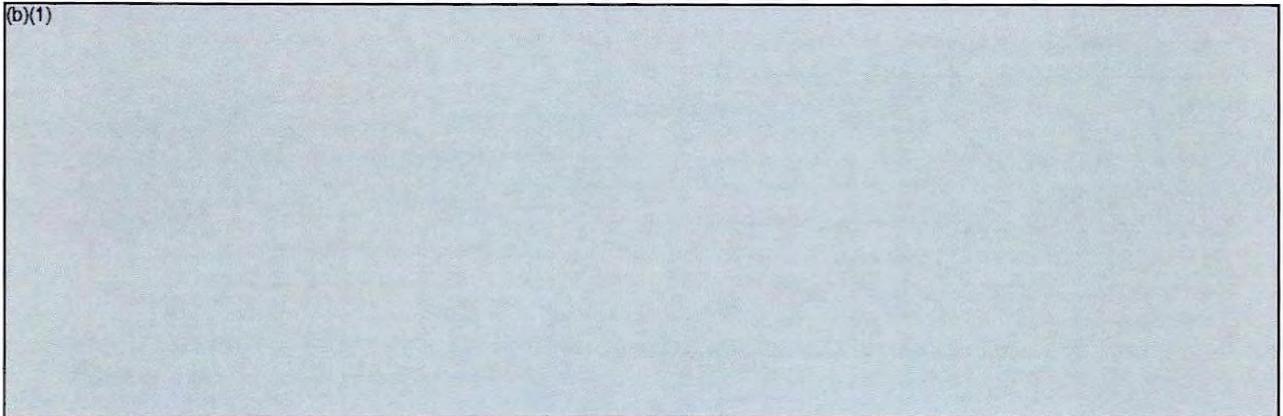
Development Estimate	Approved Program	Current Estimate
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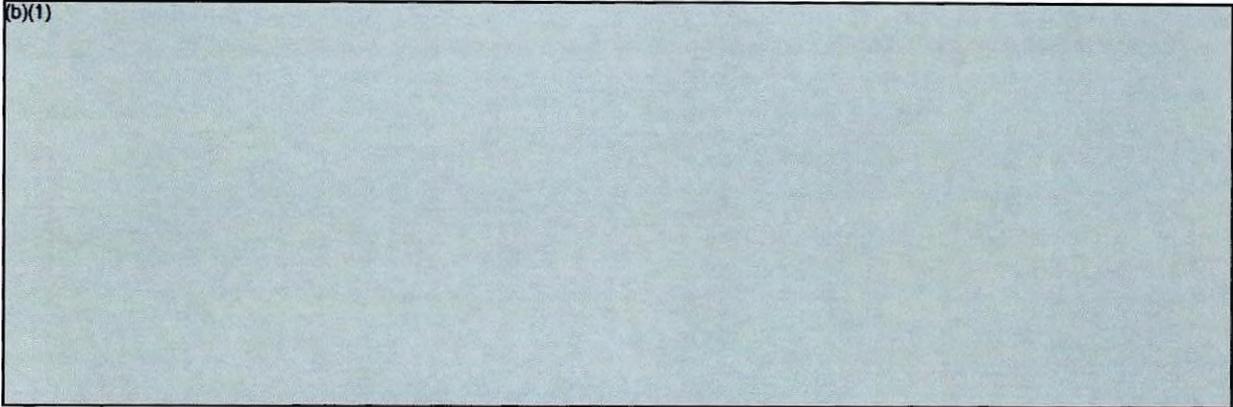
(b)(1)



b. (U) Previous Change Explanations --

(b)(1)





c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

PMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January 1984.

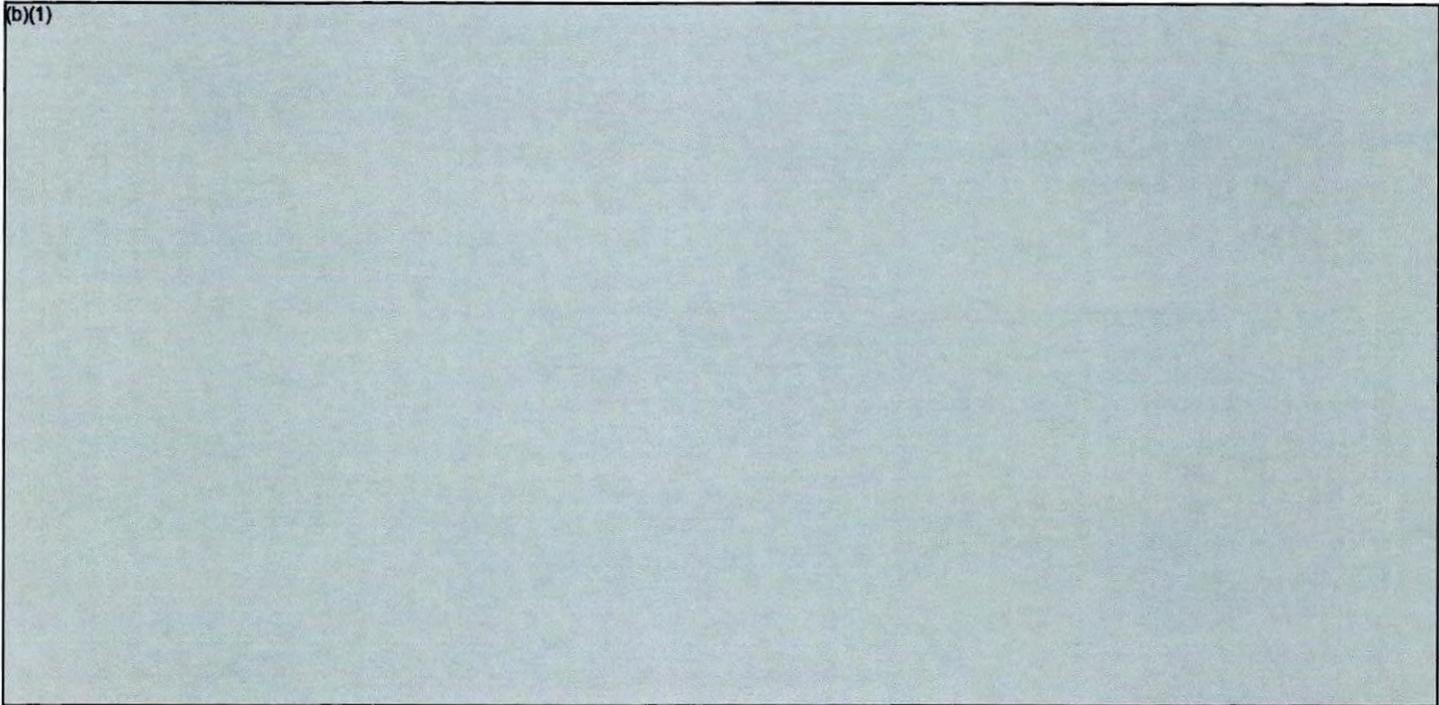
(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated March 30, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
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Probability of



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

	Approved Program	Demon- strated	Current
(b)(1)			

b. (U) Previous Change Explanations --

(b)(1)

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
PMD # NO.R-S 4047 (24) Oct 18, 1983; Specification NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January, 1984.

(U) Approved Program:
AFAP Approved Acquisition Program Baseline dated March 30, 1994.

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

a. (U) Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	1304.3	1618.3	1667.6
Procurement	3094.6	4307.2	4262.2
Flyaway	(2364.4)		(3361.9)
Other Weapon Systems	(730.2)		(900.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	25.7	25.5	25.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 78 Base-Year \$	4424.6	5951.0	5955.3
 Escalation	 1123.0	 3189.6	 3092.0
Development (RDT&E)	(-30.4)	(263.6)	(357.3)
Procurement	(1151.6)	(2924.0)	(2732.7)
Construction (MILCON)	(1.8)	(2.0)	(2.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	5547.6	9140.6	9047.3

b. (U) Quantity --			
Development (RDT&E)	4	4	4
Procurement	<u>15</u>	<u>21</u>	<u>19</u>
Total	19	25	23

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

FMD # NO.R-S 4047 (24) Oct 18, 1983; SPECIFICATION NO. DSP 80-01, Revision A, May 1, 1984. FY85 RDT&E Descriptive Summaries, January, 1984.

(U) Approved Program:

AFAR Approved Acquisition Program Baseline dated March 30, 1994.

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12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>DCR Baseline</u> (MAR 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY78\$)	5955.3	5951.0	
(2) Quantity	23	25	
(3) Unit Cost	258.93	238.04	8.77
b. (U) Procurement			
(1) Cost (BY78\$)	4262.2	4307.2	
(2) Quantity	19	21	
(3) Unit Cost	224.33	205.10	9.37

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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	1273.9	4246.2	27.5	5547.6
Previous Changes:				
Economic	-10.2	-105.1	-0.1	-115.4
Quantity	-	+1365.6	-	+1365.6
Schedule	+0.4	+156.2	-	+156.6
Engineering	-	-	-	-
Estimating	+514.2	+1018.0	+0.1	+1532.3
Other	-	-	-	-
Support	+289.4	+353.4	-	+642.8
Subtotal	+793.8	+2788.1	-	+3581.9
Current Changes:				
Economic	-10.1	-74.9	-	-85.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-32.7	30.5	-	-2.2
Other	-	-	-	-
Support	-	5.0	-	+5.0
Subtotal	-42.8	-39.4	-	-82.2
Total Changes	+751.0	+2748.7	-	+3499.7
Current Estimate	2024.9	6994.9	27.5	9047.3

*** UNCLASSIFIED ***

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

a. (U) Summary (FY 1978 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	1304.3	3094.6	25.7	4424.6
Previous Changes:				
Quantity	-	+678.4	-	+678.4
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+228.2	+307.4	-0.2	+535.4
Other	-	-	-	-
Support	+149.1	+167.9	-	+317.0
Subtotal	+377.3	+1153.7	-0.2	+1530.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-14.0	11.7	-	-2.3
Other	-	-	-	-
Support	-	2.2	-	+2.2
Subtotal	-14.0	+13.9	-	-0.1
Total Changes	+363.3	+1167.6	-0.2	+1530.7
Current Estimate	1667.6	4262.2	25.5	5955.3

b. (U) Previous Change Explanations --

RD&E

Economic: Revised economic escalation indices.

Schedule: Delay in integration effort due to launch standdown.

Estimating: Adjustment for current and prior inflation. Changes associated with software upgrades to support Satellites 14-17. Acquisition strategy change for Laser Crosslink Subsystem (LCS). Cost changes associated with Satellite Readout Station Upgrade (SRSU), development delays in Mobile Ground Terminal (MGT). Reprogramming of FY90-92 funds due to delay of System 1. Revised estimate due to cancellation of DSP-2 upgrade. Restoration of

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

fixed and mobile ground efforts. Transfer of funding from DSP to FEWS program. Additional funding for continued ground system research and development program. Reduced ground software development. Additional requirement for consolidation of ground stations. Additional funding for Talon Shield upgrades. Reduction of FFRDC and non-FFRDC contractor support. Refinement of program estimate.

Transfer of spares to operational command. Consolidated ground requirement realignment to new SBIR program. Increase for ALERT Interim Contractor Support (ICS). Reduction of ECO risk. Additional funding for continued on-orbit support funding.

Support: Integration and other program level efforts to support the acquisition of an added satellite. Hardware and software upgrades for ground stations. Increased cost GSU.

Procurement

Economic: Revised economic escalation indices. Adjustment for program change related escalation. Economic adjustment for negative program change.

Quantity: Acquisition of additional satellites in FY89-93. Decrease of one satellite from 26 to 25. Decrease of an additional 2 Satellites from 25 to 23.

Schedule: One year delay in procurement of Satellite 18. Two year delay for Satellite 19. Production delay for Satellites 23-26. Slip buy of Satellites 23-25 from FY91 to FY92.

Estimating: Adjustment for current and prior inflation. Revised procurement strategy (two in FY88 versus one each in years FY87-88). Allocation of cost change since the baseline. Change in acquisition strategy associated with MYP vice annual long-lead funding. Refinement of program estimate to reflect change from DSP-2 to DSP-1 satellites and new spacecraft. Adjustment of FY87 funds to reflect actual costs. Refinement of program estimate. Reduction of sensor engineering services and orbital support services. Additional requirement for continued on-orbit support funding. Decreased funding to support FEWS program. Additional requirement for software changes. Refinement of program estimate to reflect change of Block 23 Satellites. Adjustment of FY93 funds to reflect actual costs. Refinement of program

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

estimate to reflect actual Satellite 23 buy. Reduction of sensor engineering services and orbital support services. Correction of a previous variance categorization. Funds realignment for changing program to 12 month launch centers.

Support:

Inclusion of previously deleted logistics items to support ground systems, support of additional satellite in FY90-93. Ground Station hardware, acquisition. Addition of Satellite Readout Station Upgrade (SRSU) project, Gramm-Rudman-Hollings and Congressional reductions. Revised prior year actual costs. Decrease to reflect FB funding, Zero Baseline Transfer FY90 funds for GSU, reestimate of initial spares costs, contingent liabilities in FY85, reduction of FY86 funds for logistic support for GSU, additional ground support in FY94. Negotiated value of Satellite Readout Station Upgrade (SRSU) lower than anticipated, FY93-94 delay of logistic support for SRSU, decreased technical support for ground systems, increase in FY85-86 funds for MTF-14 and Link 1/2 efforts. Adjustment for current year and prior year inflation offset. Increase in initial spares requirement. Logistic modifications to existing ground stations. Reduced Aerospace MTS support. Refinement of Peculiar Support Equipment estimate. Additional requirement for initial spares, peculiar support equipment, and other weapon systems support items. Adjustment of FY93 funds to reflect actual costs. Increase for requirement of consolidated ground stations. Correction of a previous variance categorization. Additional funding for continued on-orbit support funding.

MILCON

Economic: Revised economic escalation indices.

Estimating: Adjustment for current and prior inflation.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) EDT&E

Revised escalation indices. (Economic)

N/A

-11.1

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+1.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+2.5
Reduction for Omnibus reprogramming provided to offset DSP Block 23 Sensor contract Request for Equitable Adjustment (REA) (Estimating)	-6.4	-14.0
Budget reduction resulted in less Aerospace technical support (Estimating)	-2.0	-4.6
Budget reductions resulted in reduced development of Talon Shield (Estimating)	-2.5	-5.8
Reduction of ECO risk (Estimating)	-4.1	-10.8
	<hr/>	<hr/>
RDT&E Subtotal	-14.0	-42.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-75.7
Economic adjustment for negative program change (Economic)	N/A	+0.8
Adjustment for Current and Prior Inflation (Estimating)	+10.4	+26.4
Eliminated the purchase of hardware for Attack and Launch Early Report to Theater (ALENF) Program in FY97 (Support)	-0.4	-1.0
Reduced initial spares (Support)	-0.8	-2.3
Adjustment for Current and Prior Inflation (Support)	+1.3	+3.1
Increased Space Modifications (Support)	+2.1	+5.2
FY94 increased for Block 23 Sensor Contracted Request for Equitable Adjustment (REA) (Estimating)	+13.7	+33.6
Reduced Engineering Change Order (ECO) Risk (Estimating)	-3.0	-8.6
Termination of Laser Crosslink System (LCS) from Block 23. (Estimating)	-15.0	-38.2
Budget reductions against program results in unexecutable launch support profile (Estimating)	-28.1	-76.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Budget increased for Evolved Expendable Launch Vehicle (EELV) Booster versus Titan IV Booster for launch of Satellite 23 (Estimating)	+33.7	+93.5
 Procurement Subtotal	<u>+13.9</u>	<u>-39.4</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
291.979	-8.713	7.851	6.809	--	66.526	--	28.165	100.638	392.617

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

a. (U) RT&E --

(U) Sat Read-Out Sta Upgrade:
LORAL, Boulder, CO
F04701-89-C-0072, FPI/CPF
Award: July 14, 1989
Definitized: July 14, 1989

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$28.1	\$28.1	0

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$103.2	\$110.7	4	\$133.0	\$133.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-33.4	\$0.1
Cumulative Variances To Date (12/22/95)	<u>\$-33.2</u>	<u>\$0.3</u>
Net Change	\$0.2	\$0.2

Explanation of Change:

Significant changes are due to undefinitized work on the contract being priced out resulting in an increased negotiated cost and price.

Quantity change cannot be measured in dollars due to a major upgrade of four antennas and two large processing stations and equipment sets installed at several world wide locations.

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

The Contractor and the Program Manager are in agreement with the Estimated Price at Completion (EPC); the increase is due to data rights and depot hardware purchases (\$12.3). Also, several REAs have been settled (\$11.6).

Additional Interim Contractor Support (ICS) has been procured along with test stations for the government owned depot.

There is no impact to the contract or program.

The SRSU contract is 95% completed and therefore will no longer be reported.

b. (U) Procurement --

(U) <u>Satellites 18-22:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TRW Space & Defense, Redondo Beach, CA FO4701-86-C-0022, FPI Award: July 30, 1987 Definitized: July 30, 1987	\$743.5	\$782.5	5

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$711.3	\$749.8	5	\$746.4	\$746.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-50.9	\$-0.1
Cumulative Variances To Date (12/29/95)	\$-51.7	\$-0.4
Net Change	\$-0.8	\$-0.3

Explanation of Change:

Increase in negotiated cost and target price is due to recognizing, reconciling, realigning, and adding funding in conjunction with the billing price adjustment (correction of previous modification).

The contractor's estimated price at completion (EPC) changed due to negotiated cost and target price change.

There is no impact to the contract or program.

The Satellites 18-22 are more than 90% completed and therefore will no longer be reported.

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

			<u>Initial Contract Price</u>		
(U) <u>Satellites 23-25:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TRW Space & Defense, Redondo Beach, CA					
FO4701-93-C-0001, FPI			\$619.3	\$653.4	3
Award: June 11, 1993					
Definitized: June 11, 1993					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$521.9	\$550.8	1	\$515.4	\$515.4	
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/29/95)			\$4.2	\$-0.8	
Net Change			\$6.7	\$-2.5	
			\$2.5	\$-1.7	

Explanation of Change:

The current contract price change is due to definitization of the Laser Crosslink System (LCS) partial termination and Vibration Isolation Assembly (VIA) effort for Satellite 23 only.

The Contractor's estimated price at completion decreased due to change in negotiated cost.

The government EAC represents the projected EAC when the funds for the LCS termination and the cancellations of Satellites 24 and 25 are taken off the contract. This provides the government with a proactive forecast, more accurately representing the government future commitment. These figures are pending negotiations and could change significantly.

There is no impact to the contract or the program.

			<u>Initial Contract Price</u>		
(U) <u>Sensors 23-25:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gencorp, Aerojet, Azusa, CA					
FO4701-93-C-0002, FPI/AF/CP			\$485.6	\$507.1	3
Award: June 11, 1993					
Definitized: June 11, 1993					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$485.6	\$507.1	1	\$485.6	\$269.4	

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$1.5
Cumulative Variances To Date (12/22/95)	\$1.2	\$-1.0
Net Change	\$0.8	\$-2.5

Explanation of Change:

The net cost changes resulted from the quantity which was reduced from three to one. The Program Manager's Estimated Price at Completion (EPC) does not reflect these changes pending the negotiations on cancellation of sensors 24 and 25.

The cost variances are insignificant. There is no impact to the contract or program.

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

a. (U) Program Status --

- (1) Percent Program Completed: 85.7% (30 yrs/35 yrs)
- (2) Percent Program Cost Appropriated: 90.3% (\$8169.4 / \$9047.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY67-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
EDT&R	1818.3	34.5	29.4	142.7	2024.9
Procurement	6182.6	106.5	74.0	631.8	6994.9
MILCON	27.5	-	-	-	27.5
O&M	-	-	-	-	-
Total	8028.4	141.0	103.4	774.5	9047.3

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

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

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

1967				57.1	30.8	30.8	30.8	3.1
1968				93.4	52.3	52.3	52.3	3.6
1969				162.4	95.3	95.3	95.3	4.2
1970				118.9	73.5	73.5	73.5	5.4
1971				130.7	84.4	84.4	84.4	5.3
1972				47.5	31.9	31.9	31.9	3.6
1973				46.7	32.3	32.3	32.3	3.6
1974				77.6	60.1	60.1	60.1	8.3
1975				40.7	34.4	34.4	34.4	10.8
1976				18.2	16.4	16.4	16.4	7.0
197T								
1977				30.4	29.4	29.4	29.4	7.5
1978				28.0	28.7	28.7	28.7	6.0
1979				27.2	30.6	30.6	30.6	8.4
1980				24.8	31.0	31.0	31.0	9.4
1981				63.2	87.6	87.6	87.6	11.9
1982				97.4	144.2	144.2	144.2	9.2

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (t)
		Nonrec	Rec		Program	Obligated	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1983				76.9	119.2	119.2	119.2	4.9
1984				29.6	47.7	47.7	47.7	3.8
1985				38.0	63.3	63.3	63.3	3.4
1986				37.4	63.8	63.8	63.8	2.8
1987				64.8	115.4	115.4	115.4	2.7
1988				48.9	89.4	89.4	89.4	3.0
1989				52.0	99.8	99.8	99.8	4.2
1990				45.4	89.7	89.7	88.7	4.0
1991				34.7	71.2	71.2	65.5	4.3
1992				24.2	51.1	51.1	43.2	2.8
1993				22.1	47.7	47.7	44.2	2.7
1994				16.6	36.5	36.5	30.1	2.0
1995				27.1	60.6	55.6	33.4	1.9
1996				15.1	34.5	14.0	1.3	2.0
1997				12.6	29.4			2.2
1998				15.4	36.7			2.3
1999				14.8	36.0			2.2
2000				13.7	34.1			2.2

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2001				14.1	35.9			2.2
Subtot	4			1667.6	2024.9	1827.3	1767.9	

Appropriation: 3020 Missile Procurement, Air Force

1969				31.4	17.8	17.8	17.8	3.5
1970				62.3	37.0	37.0	37.0	4.7
1971	3		282.6	165.3	102.8	102.8	102.8	5.7
1972	2		188.4	157.5	105.2	105.2	105.2	3.7
1973	3		282.6	231.4	167.1	167.1	167.1	4.7
1974				38.1	28.1	28.1	28.1	8.4
1975	1		94.2	91.7	80.8	80.8	80.8	16.3
1976				42.1	39.5	39.5	39.5	7.9
197T								
1977				27.9	28.0	28.0	28.0	7.5
1978				88.9	94.1	94.1	94.1	6.0
1979				100.0	123.4	123.4	123.4	8.7
1980				73.9	103.9	103.9	103.9	9.7
1981				33.5	51.8	51.8	51.8	11.9

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1982				146.2	241.4	241.4	241.4	9.6
1983	2		583.7	273.5	478.1	478.1	478.1	9.0
1984	2		583.7	239.5	436.6	436.6	436.6	8.0
1985				28.3	53.0	53.0	53.0	3.4
1986				56.7	111.4	111.4	111.4	2.8
1987				126.9	259.8	259.8	259.8	2.7
1988	1		130.7	166.5	353.4	343.6	330.4	3.0
1989	2		261.4	194.2	430.4	430.4	417.0	4.2
1990	1		130.7	152.2	343.5	343.5	251.3	4.0
1991	1		130.7	140.5	326.3	322.2	280.9	4.3
1992				27.4	64.4	50.1	36.6	2.8
1993				85.8	206.2	157.7	115.3	2.7
1994	1		693.2	156.4	383.9	303.7	143.7	2.0
1995				142.6	354.2	266.3	106.1	1.9
1996				25.5	64.7	32.5	3.0	2.0
1997				27.4	71.0			2.2
1998				65.6	174.1			2.3
1999				42.7	115.8			2.2

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2000				57.2	158.5			2.2
2001				62.8	177.8			2.2
Subtot	19		3361.9	3361.9	5784.0	4809.8	4244.1	

Appropriation: 3080 Other Procurement, Air Force

1969				31.3	17.6	17.6	17.6	3.5
1970				144.5	85.4	85.4	85.4	4.7
1971				56.5	35.0	35.0	35.0	5.7
1972				65.2	42.0	42.0	42.0	3.7
1973				27.6	19.0	19.0	19.0	4.7
1974				2.2	1.7	1.7	1.7	8.4
1975				6.4	5.6	5.6	5.6	16.3
1976				13.7	12.8	12.8	12.8	7.9
1977								
1977				13.6	13.6	13.6	13.6	7.5
1978				0.3	0.3	0.3	0.3	6.0
1979				6.0	7.6	7.6	7.6	8.7
1980				19.0	26.6	26.6	26.6	9.7

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

1981				46.8	70.3	70.3	70.3	11.9
1982				66.5	103.4	103.4	103.4	9.2
1983				55.8	90.1	90.1	90.1	4.9
1984				21.7	36.1	36.1	36.1	3.9
1985				29.9	51.4	51.4	51.4	3.4
1986				71.9	128.9	128.9	128.9	2.7
1987				48.3	89.8	89.8	89.8	2.7
1988				13.8	26.6	25.5	23.6	3.0
1989				0.9	1.8	1.8	1.8	4.2
1990				34.5	71.0	71.0	63.9	4.0
1991				35.2	74.2	70.2	54.2	4.3
1992				26.7	58.0	56.0	32.5	2.8
1993				17.1	37.7	35.4	27.1	2.7
1994				12.9	29.1	23.4	18.8	2.0
1995				10.8	24.9	20.4	13.6	1.9
1996				17.8	41.8	13.6		2.0
1997				1.2	3.0			2.2
1998				0.8	2.0			2.3

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

1999				0.8	2.0			2.2
2000				0.4	1.0			2.2
2001				0.2	0.6			2.2
Subtot				900.3	1210.9	1154.5	1072.7	

Appropriation: 3300 Military Construction, Air Force

1975				19.6	17.3	17.3	17.3	8.5
1976								
1977								
1978								
1979								
1980								
1981								
1982								
1983				1.1	1.9	1.9	1.9	4.9
1984								
1985				4.8	8.3	8.3	8.3	3.4

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

Fiscal Year	Qty	Flyaway FY78 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3300 Military Construction, Air Force (Cont'd)

Subtot				25.5	27.5	27.5	27.5	
Grand Total	23		3361.9	5955.3	9047.3	7819.1	7112.2	

Obligation and Expenditure information reflects official accounting records as of 29 Feb 96.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

	<u>Plan/Actual</u>
EDT&E	4/4
Procurement	19/19

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

These Operations and Maintenance (O&M) funds implement PMD direction to support system sustaining engineering (orbital satellites, ground data systems, and operational system users), and to continue support of Ground Data Systems (GDS) sensors and survivability-enhanced Satellites 14-23. Support of operational orbital satellites includes anomaly detection and correction, analysis of on-orbit sensor performance, data compilation and analysis, analysis of special-interest, computer support functions, and launch support. These sustaining efforts reflect a relatively stable level-of-effort requirement through the Financial Plan years to support both advanced configuration of new operational satellites, and an aging orbital satellite configuration with increased anomaly resolution requirements. O&S data is of 29 Feb 96.

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

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per DSP System	Avg Annual Cost Per No Antecedent
Other Direct Costs	26.3	N/A
Total	26.3	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OSM (Air Force)	64.6	8.1	8.5	---	81.2
Industrial Fund	---	---	---	---	---
Total	64.6	8.1	8.5	---	81.2

~~XXXXXXXXXX~~

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: SBIRS (High)

AS OF DATE: December 31, 1995

INDEX

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1. (U) Designation and Nomenclature (Preferred Name):
Space Based Infrared System (SBIRS) (High)

2. (U) DoD Component: USAP

3. (U) Responsible Office and Telephone Number:
SMC/MT COL CRAIG P. WESTON
185 Discoverer Blvd. Assigned: March 1, 1994
Suite 2512 AV 833-1807 COMM (310) 363-1807
Los Angeles, CA 90245-4695

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

RDT&E:
PE 0604441F

5. (U) Related Programs:

(U) Defense Support Program (DSP), Advanced Programs- Cobra Brass (CB), Miniature Sensor Technology Integration (MSTI-3), Midcourse Space Experiments (MSX), Russian American Observational Satellite (RAMOS), Space and Missile Tracking System (SMTS) [aka Brilliant

96-C-02

SAF/PAS

96-206-7

~~Classified by SP4 PDB/SP4 JCS/SP4 JCS~~
~~Derived from NSA Subject to Executive Order 11652~~
~~Declassify on Originating Agency's Determination Required (OADR)~~

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5. (U) Related Programs (Cont'd):

Eyes (BE)), Titan IV, Attack and Launch Early Report to Theater (ALERT)/Talco Shield.

6. (U) Mission and Description:

The Space Based Infrared System (SBIRS) program is a new effort to satisfy key requirements delineated in the SBIRS Capstone Requirements Document (CRD), within the available budget and schedule. SBIRS is an integrated "system of systems", consisting of multiple space and ground elements, with deployment phasing "High now, Low later", simultaneously satisfying requirements in the following mission areas: Missile Warning; Missile Defense; Technical Intelligence; and Battlespace Characterization. The baseline architecture for SBIRS includes space elements in Highly Elliptical Orbits (HEO), Geosynchronous Earth Orbits (GEO), and Low Earth Orbits (LEO), in addition to the following ground elements: a CONUS-based Mission Control Station (MCS) and backup (MCSB), overseas Relay Ground Stations (RGSs), Relocatable Terminals (RTs), and associated communication links. The High Component consists of four satellites in GEO, two hosted sensors in HEO (platforms provided by another organization), and associated ground elements.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

Between November 1994 and February 1995, the SBIRS Program Office developed the first Single Acquisition Management Plan (SAMP) outlining the acquisition strategy to fulfill the requirements in the SBIRS Capstone Requirements Document (CRD). The SAMP was approved on 6 Feb 95 and paved the way for the release of a Request for Proposal (RFP) to select two contractor teams for a one-year Pre-Engineering and Manufacturing Development (EMD) contract. The RFP was released on 17 Feb 95.

b. (U) Significant Developments Since Last Report --

On 4 Aug 95, SBIRS pre-EMD contracts were awarded to two prime contractor teams: Lockheed-Martin, and Hughes/TRW. Following the accomplishment of pre-EMD trades, allocation of SBIRS requirements to elements of the system, and definition of system functional requirements to elements of the system, a downselect and successful Defense Acquisition Executive (DAE) decision will allow one team to go forward into the EMD phase by 1 Oct 96.

The integrated Air Force Space Command (AFSPC)-SMC SBIRS team, in conjunction with the user community and contractors, is executing an intensive requirements closure process. The first Interim Progress Review (IPR) #1 was held from 30 Oct - 2 Nov 95 with the two SBIRS High contractor teams and Pentagon, Service, CINC, AFSPC, and SPO representatives making up the Requirements Review Group (RRG).

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7b. (U) Program Highlights (Cont'd):

During this meeting, both contractors showed they had appropriately bounded the trade space and were on track with their requirement cost versus military benefit trade process. During the IPR #2 held on 12-15 Dec 95, the contractors presented the results of the major trade studies completed to date and used the results to recommend changes to the current draft Operational Requirements Document (ORD) language. Technical Intelligence (TI), Multi-Mission capability, and Survivability requirements are the main cost drivers. However, the full range of requirements is being addressed. The interested user communities have been heavily involved in the requirements clarification discussions to date. At IPR #2, the contractors also narrowed their many design options to several basic solutions each.

The SPO has continued to refine its SBIRS acquisition strategy which, in addition to selecting the contractor with the "best" solution for EMD, will also satisfy all criteria for entry into EMD, as detailed in the Acquisition Decision Memorandum, dated 8 Feb 95. The goal is to be on contract for EMD by 1 Oct 96. An AF and OSD Integrated Process Team (IPT) kickoff meeting was held 29 Nov 95 to form working groups to update the SAMP and prepare for the DAE review scheduled for 30 Aug 96--the decision point for moving into the EMD Phase. During Dec 95, the SBIRS High acquisition strategy was briefed to the Service Acquisition Executive (SAE), who approved the downselect approach.

Congress reprogrammed \$20M from Other Procurement (3080) to RDT&E (3600) due to ground procurement requirements being deferred until FY97.

The SBIRS system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --

A Senior Warfighters' Conference, attended by flag officer representatives from the Air Force Space Command (AFSPC) SBIRS team and User community, met from 31 Jan-1 Feb 96 to resolve SBIRS requirements issues prior to the Jul 96 Joint Requirement Oversight Council (JROC). The major requirements issues addressed by user groups were performance, survivability, and data availability as constrained by affordability. Contractors submitted 279 suggested changes to requirements and CONOPS. The Warfighters reviewed and documented a collective perspective on proposed changes and clarifications to SBIRS requirements and will advocate service command acceptance of their consensus view. All issues were resolved for the JROC and Systems Requirement Review (SRRs). A JROC is scheduled for 16 Apr 96 to approve the USSPACECOM CRD. Another JROC is planned in Jul 96 to approve proposed AFSPC ORD changes.

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7c. (U) Program Highlights (Cont'd):

SRRs were held at Lockheed-Martin from 20-23 Feb 96, and at Hughes/TRW from 26-29 Feb 96. The contractors successfully defined and showed understanding of system requirements, their allocation and flowdown of requirements with rationale and supporting analysis, described "system-of-systems" concept architecture(s) and rationale for selection, showed supporting cost and performance analyses, and addressed technical and schedule risk. The next milestones will be System Functional Reviews (SFR) to be held in Jun 96.

8. (U) Threshold Breaches:

There are no breaches to the Air Force Acquisition Executive (AFAE) Acquisition Program Baseline (APB), dated 06 February 1995. Numm-McCurdy unit cost reporting is not required for Pre-Milestone II programs, IAW Title 10, USC, Section 2433.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Pre-EMD			
System Requirements Review	TBD	TBD	FEB 96 (Ch-1)
System Functional Review	TBD	TBD	JUN 96 (Ch-1)
EMD			
Ground Increment 1 Operational	SEP 99	SEP 99	SEP 99 (Ch-1)
Man Control Station Govt Acceptance	SEP 01	SEP 01	SEP 01 (Ch-1)
GEO Satellite 1 Delivery	SEP 02	SEP 02	SEP 02 (Ch-1)
HEO Sensor 1 Delivery	SEP 02	SEP 02	SEP 01 (Ch-1)

It is expected that the Approved Acquisition Program Baseline (APB) will be updated at the EMD decision based on pre-EMD efforts and cost performance trade-offs.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) The TBD schedule milestones have been updated with dates based upon government and contractor coordinated schedules.

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

(U) Approved Program:

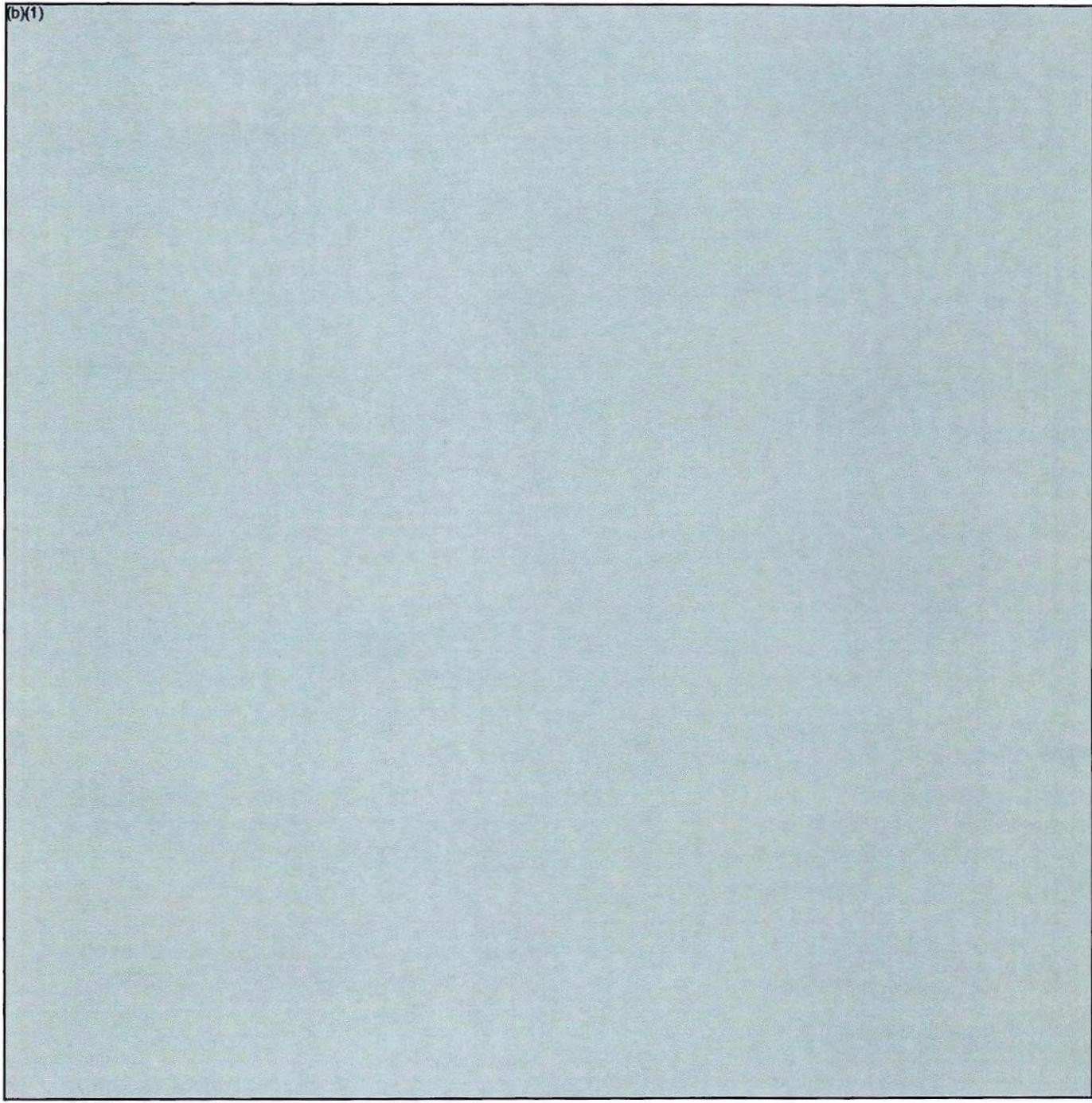
DAE Approved Acquisition Program Baseline dated February 06, 1995.

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10. (U) Performance Characteristics:

a. (U) Performance --

<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------	---	------------------------------------	-----------------------------

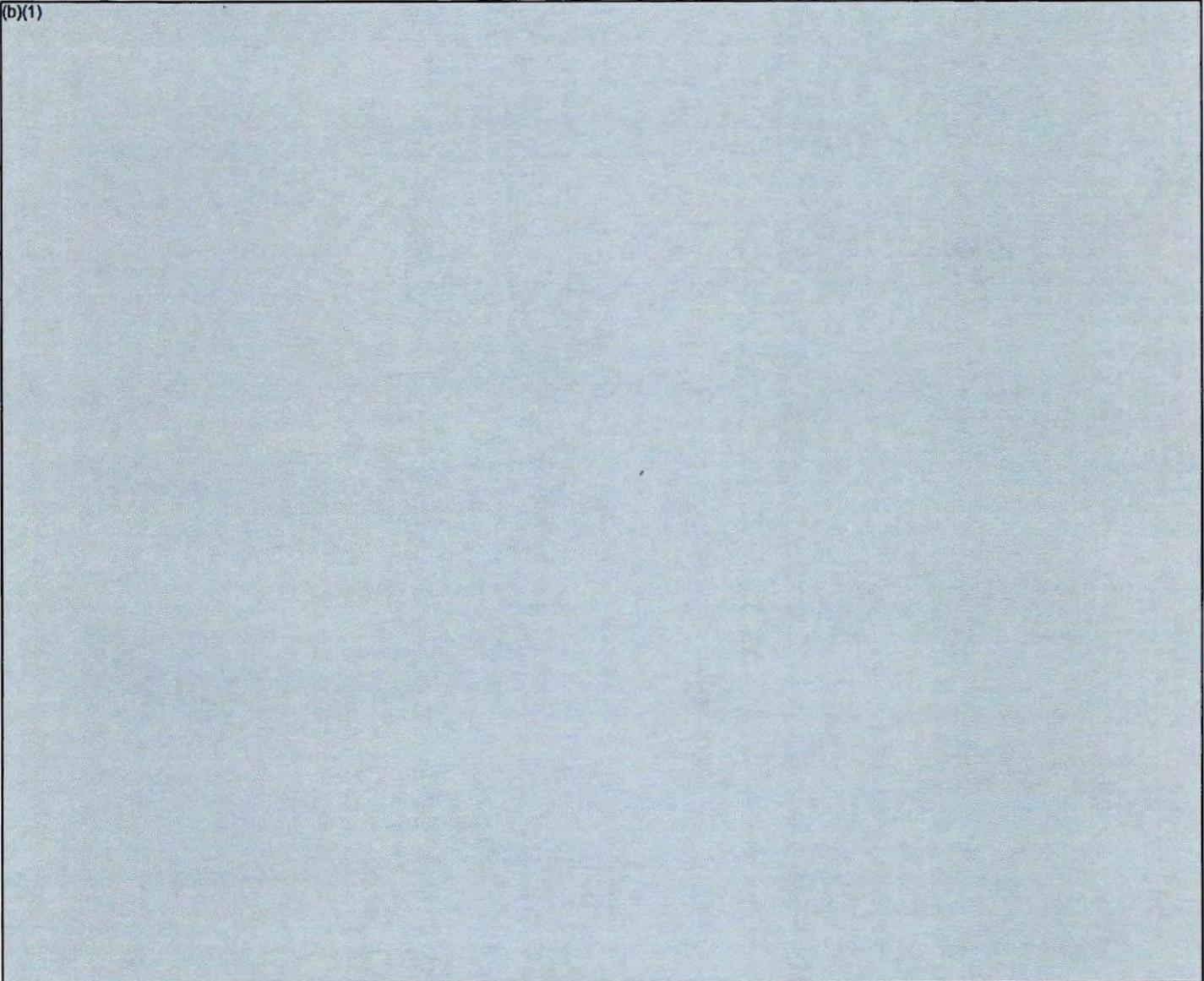


(b)(1)

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

	Approved Program	Demon- strated	Current
--	---------------------	-------------------	---------

(b)(1)



It is anticipated several of the performance characteristics may change after the Jul 96 JROC. These changes will then be reported in the next SAR.

ACRONYMS:

CFLOS - Cloud-Free Line of Sight

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

b. (U) Previous Change Explanations --

It is expected that the Approved Acquisition Program Baseline (APB) will be updated at the EMD decision based on Pre-EMD efforts and cost performance trade-offs.

c. (U) Current Change Explanations --

(b)(1)

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

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

a. (U) Cost --	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	2308.0	254.5	2318.9
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	2308.0	254.5	2318.9
 Escalation	 362.3	 1.5	 257.9
Development (RDT&E)	(362.3)	(1.5)	(257.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2670.3	256.0	2576.8

The Approved Program costs are for Pre-EMD SBIRS High only, as approved in the DAE Acquisition Program Baseline (APB) dated February 6, 1995.

The Planning Estimate and Current Estimate totals include Pre-EMD and EMD costs for SBIRS High through FY01.

This estimate was inserted by OUSD/A&T and may not be realistic. The

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

program office intended this SAR to be only for the one year pre-RMD program, with the total program costs updated upon successful completion of Milestone II in Aug 96.

SBIRS

	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	N/A	N/A	N/A
Total	0	0	0

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

 (U) Planning Estimate:

 DAE Approved Acquisition Program Baseline dated February 06, 1995.

 (U) Approved Program:

 DAE Approved Acquisition Program Baseline dated February 06, 1995.

12. (U) Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

SBIRS (High), December 31, 1995

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2670.3	0.0	0.0	2670.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-104.8	-	-	-104.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	11.3	-	-	+11.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-93.5	-	-	-93.5
Total Changes	-93.5	-	-	-93.5
Current Estimate	2576.8	-	-	2576.8

SBIRS (High), December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2308.0	0.0	0.0	2308.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	10.9	-	-	+10.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+10.9	-	-	+10.9
Total Changes	+10.9	-	-	+10.9
Current Estimate	2318.9	-	-	2318.9

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-104.8
Adjustment for Current and Prior Inflation. (Estimating)	+3.1	+3.2
Increased funds for ground consolidation efforts. (Estimating)	+9.7	+10.1

SBIRS (High), December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Reduction to ECO Risk. (Estimating)	-1.9	-2.0
RDT&E Subtotal	<u>+10.9</u>	<u>-93.5</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

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

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

a. (U) RDT&E --	Initial Contract Price		
(U) <u>SBIRS High Pre-EMD:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LMSC, Sunnyvale, CA			
F04701-95-C-0017, CPFF	\$80.0	\$80.0	0
Award: August 4, 1995			
Definitized: August 4, 1995			
Current Contract Price			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$80.0	\$80.0	0
Estimated Price At Completion			
	<u>Contractor</u>	<u>Program Manager</u>	
	\$80.0	\$80.0	
Cost Variance Schedule Variance			
Previous Cumulative Variances	\$0.0	\$0.0	
Cumulative Variances To Date (01/28/96)	\$1.6	\$-0.5	
Net Change	\$1.6	\$-0.5	

Explanation of Change:

An Integrated Baseline Review (IBR) was successfully conducted and completed on 20 Dec 95. The Contract Cost Baseline was established on 29 Sep 95. Cost information in this report is as-of 28 Jan 96 per the "Feb 96 Cost Performance Report" which shows Jan 96 fiscal month-end data. The cumulative positive cost variance is due to temporary delays in manpower usage in the System Engineering area. The cumulative negative schedule variance is due to unplanned efforts in the subcontracted Ground Assembly and Checkout design effort. The responsible subcontractor has modified their estimate at completion to stay within allocated resources. These variances will have no impact to the contract or to the program. Overall, the program is doing well. Cost is underrunning by 5%, and the schedule is within 2% of plan. The SPO anticipates no significant future cost or schedule problems for the Pre-EMD.

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

SBIRS (High), December 31, 1995

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

(U) <u>SBIRS High Pre-EMD:</u>			Initial Contract Price		
Hughes Aircraft, El Segundo, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
F04701-95-C-0018, CPPF			\$80.0	\$80.0	0
Award: August 4, 1995					
Definitized: August 4, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$80.0	\$80.0	0	\$80.0	\$80.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date (01/26/96)			\$1.6	\$-0.4	
Net Change			\$1.6	\$-0.4	

Explanation of Change:

An Integrated Baseline Review (IBR) was successfully conducted and completed on 18 Dec 95. The Contract Cost Baseline was established on 24 Nov 95. Cost information in this report is as-of 26 Jan 96 per the "Feb 96 Cost Performance Report" which shows contractor's Jan 96 fiscal month-end data. The cumulative cost variance reflects a positive \$1.6M due to temporarily delayed effort in the Electronic Information Integrated Product Team (IPT). No other IPTs have exceeded the cumulative thresholds for either cost or schedule variance reporting. The reported variances have no impact on the contract or to the program. Overall, the program is doing well. Cost is underrunning by 3%, and the schedule is within 1% of plan. The SPO anticipates no significant future cost or schedule problems.

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

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

a. (U) Program Status --

- (1) Percent Program Completed: 28.6% (2 yrs/7 yrs)
- (2) Percent Program Cost Appropriated: 10.7% (\$275.3 / \$2576.8)

SBIRS (High), December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2001)</u>	<u>Total</u>
RDT&E	113.0	162.3	173.3	2128.2	2576.8
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	113.0	162.3	173.3	2128.2	2576.8

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

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

1995				111.2	113.0	107.3	67.3	1.9
1996				156.4	162.3	123.0	17.9	2.0
1997				163.3	173.3			2.2
1998				276.7	300.2			2.3
1999				487.4	540.5			2.2
2000				557.2	631.3			2.2
2001				566.7	656.2			2.2
Subtot				2318.9	2576.8	230.3	85.2	
Grand Total				2318.9	2576.8	230.3	85.2	

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SBIRS (High), December 31, 1995

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

Expenditures and obligations reflect program office records as of 29 Feb 96.

17. (U) Production Rate Data:

a. (U) Deliveries to Date -- 0/0.

b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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A-4 ATACMS/APAM

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

PROGRAM: Army TACMS/APAM

AS OF DATE: December 31, 1995

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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1. (U) Designation and Nomenclature (Preferred Name):
Army Tactical Missile System (Army TACMS/APAM)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
HQDA COL John W. Holly
ATTN: SFAE-MSL-AB Assigned: January 9, 1996
Redstone Arsenal, AL 35898-5650 AV 746-1141 COMM (205) 876-1141

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

RDT&E:

PE 64324 Project D302
PE 23802 Project D304, D2MT

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Army TACMS/APAM, December 31, 1995

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

PROCUREMENT:

APPN 2032 ICN C98500 (Army)
APPN 2032 ICN C98501 (Army)
APPN 2032 ICN C98502 (Army)
APPN 2032 ICN C98510 (Army)
APPN 2032 ICN CA0261 (Army)

MILCON:

PE 024030

5. (U) Related Programs:

Army TACMS Smart Submunition Warhead; Fire Direction Data Manager (FDDM); Multiple Launch Rocket System (MLRS); Improved Fire Control System M270 (IFCS); Joint Precision Strike Demonstration (JPSD); BAT; BAT Pre-Planned Product Improvement (BAT P3I); Block II; Block IIA; Advanced Field Artillery Tactical Data System (AFATDS); and a Navy Cooperative effort for Navy TACMS Advanced Technology Demonstration (ATD).

6. (U) Mission and Description:

The Army Tactical Missile System (Army TACMS/APAM) Block I is a ground-launched missile system consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The Improved Army TACMS (Block IA) integrates global positioning system (GPS) components and increases range of the Block I missile. The inherent GPS accuracies will be achievable independent of range. Army TACMS missiles are fired from the Multiple Launch Rocket System (MLRS) modified M270 launcher and are being deployed within the ammunition loads of corps MLRS battalions and/or division artillery MLRS batteries. Army TACMS includes: GUIDED MISSILE AND LAUNCHING ASSEMBLY TEST SET, GUIDED MISSILE SYSTEM TRAINING SET, GUIDED MISSILE SYSTEM: M165 TRAINER, TEST DEVICE, GUIDED MISSILE: M70 Modified M270 Launcher Army TACMS Missile Facilities. The Army TACMS provides a deep fires missile system that operates in near all-weather conditions, day or night. It is used to attack tactical surface-to-surface missile sites, air defense missile sites, logistics elements and command/control/communication complexes. The Block IA missile will destroy high value targets at ranges approximately twice that of the current Block I missile. The Block IA missile will be especially suited for destroying enemy surface-to-surface missile system launchers.

Army TACMS Block I replaces the conventional Lance system and the Army TACMS Block IA does not replace another defense system.

Army TACMS/APAM, December 31, 1995

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Army TACMS Missile System resulted from a need to engage high priority targets at ranges beyond those of existing weapons. The Required Operational Capability (ROC) was approved in May 85, and Army TACMS entered Full-Scale Development (FSD) in Mar 86. Army TACMS was successfully utilized in support of Operation Desert Shield/Desert Storm. On 2 Nov 90, Army TACMS proceeded to Milestone III, full-rate production (FRP), and its Test and Evaluation Master Plan (TEMP) was approved in Aug 91. Five follow-on production test (FPT) flights (Nos. 2-6) were completed in Sep 92. The Block I production buy was split and stretched as directed by a Strategic Systems Committee (SSC)/Conventional Systems Committee (CSC) in Feb 93, resulting in approval for the Block IA program. The FRP IV production contract was restructured to stretch out the FY 94 missile buy, adding 50 Block I missiles in FY 96, increasing the procurement program to 1647. The Block IA procurement program added an additional 800 missiles. The Block IA Program Milestone IV/II Review was conducted in Feb 94, and the Army Systems Acquisition Review Council (ASARC) approved the program for Engineering and Manufacturing Development (EMD) as well as the exit criteria for the subsequent production decision review. The 100th Army TACMS Missile, SRP-7 was launched on 9 Jun 94. On 30 Jun 94, the Principal Deputy Under Secretary of Defense directed that the Army TACMS Block I and Block IA programs be combined as an Acquisition Category (ACAT) 1C Major Defense Acquisition Program (MDAP) for reporting purposes. Testing of prototype Block IA Missiles was successfully conducted in support of the FY 94 Joint Precision Strike Demonstration (JPSD). DOD directed funding reductions and restructure, and the Army TACMS/APAM (Block IA) program was restructured to accommodate two Low-rate Initial Production (LRIP) buys instead of one as the Approved Program Baseline (APB), 8 Feb 94, initially reflected. On 11 Jan 95, a prototype Block IA missile was successfully fired at White Sands Missile Range (WSMR) in support of the Naval Surface Fire Support Advance Technology Demonstration (ATD) to demonstrate the capability to launch a modified Army TACMS missile from an M270 launcher on a sea-going platform and successfully engage a land target. The first "at-sea" launch of an Army TACMS Missile was successfully conducted on 12 Feb 95.

b. (U) Significant Developments Since Last Report --

There were 180 Block I Missiles delivered in 1995 for a sum total of 1422 Missiles. On 15-16 Feb 95, a successful hardware Critical Design Review (CDR) was conducted for the Block IA Army TACMS Missile in order to finalize the design and hardware to be used in the Improved Missile Guidance Set (IMGS) for EMD. Permission was then given to proceed with manufacturing and delivery of flight IMGS units. The Block IA EMD Hardware CDR for remaining missile components was successfully conducted, 2-3 May 95, at Loral to

Army TACMS/APAM, December 31, 1995

7b. (U) Program Highlights (Cont'd):

finalize the design of the Block IA Missile. Approval of Loral's proposed design and the commencement of manufacturing flight hardware and qualification testing was granted. The Block IA TEMP was approved by the Office of the Secretary of Defense (OSD) on 6 Mar 95. The Army TACMS/APAM APB was signed by the Army Acquisition Executive (AAE) on 24 Mar 95, and a copy was furnished to DOD. The Record of Decision, which selected WSMR as the extended range test site, was submitted to the Space and Strategic Defense Command (SSDC) Environmental Office on 8 May 95. The Software Preliminary Design Review (PDR) for the Block IA EMD Program was successfully conducted at Loral Vought, 9-10 May 95. The objectives were met and Loral was granted authorization to proceed with detailed design of Block IA software and proceed to the CDR. The Block IA LRIP and Long Leadtime Items (LLTI) Acquisition Strategy Report (ASR) was signed on 20 Dec 95. This ASR supports the procurement of 70 missiles in LRIP and the exercise of an LLTI Firm Fixed Price (FFP) option in Dec 96 to preclude a production break or the need for a second LRIP. A Letter of Offer and Acceptance for a proposed sale of Army TACMS Block I Missiles was provided to Turkiye 27 Dec 95.

Army TACMS/APAM is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date --

On 8 Feb 96, a production representative model of the Block IA Army TACMS Missile was successfully fired from McGregor Range in Fort Bliss, TX, in support of the Pre-production Test (PPT-1) Flight test. The Block IA PPT-2 Flight test is scheduled at WSMR on 7 Mar 96.

8. (U) Threshold Breaches:

There are no breaches to the approved APB, dated 24 Mar 95. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Army TACMS Block I			
Assault Breaker Tech Demonstration			
Start	APR 78	APR 78	APR 78
Complete	DEC 82	DEC 82	DEC 82
Special Task Force Initiated	MAR 81	N/A	MAR 81
Mission Element Need Statement Approval	APR 81	N/A	APR 81

Army TACMS/APAM, December 31, 1995

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

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Joint (Army/AF) Program Directed	JUN 82	JUN 82	JUN 82
ROC Approved	MAY 85	MAY 85	MAY 85
Request For Proposal (RFP) Released	JUN 85	N/A	JUN 85
Milestone II (ASARC)	DEC 85	N/A	DEC 85
Milestone II (DSARC)	FEB 86	FEB 86	FEB 86
FSD Contract Award	MAR 86	MAR 86	MAR 86
EDT-C			
Start	MAR 86	MAR 86	MAR 86
Complete	FEB 89	FEB 89	FEB 89
Depot Service Support	N/A	JUN 87	JUN 87
Long Lead Time Items Contract Option Award	MAY 88	MAY 88	MAY 88
DA Program Review (ASARC IIIA)	FEB 89	JAN 89	JAN 89
LRIP Contract Option Award	FEB 89	FEB 89	FEB 89
DT II Flight Test			
Start	MAR 89	MAR 89	MAR 89
Complete	DEC 89	DEC 89	DEC 89
OT Readiness Review	MAR 90	MAR 90	MAR 90
First LRIP Delivery	MAR 90	MAR 90	MAR 90
IOTE Flight/Ground Test			
Start	MAR 90	MAR 90	MAR 90
Complete	JUN 90	JUN 90	JUN 90
Confirmatory Test Complete (if required)	JUL 90	JUN 90	JUN 90
First Unit Equipped	AUG 90	AUG 90	AUG 90
Initial Operational Capability (IOC)	OCT 90	AUG 90	AUG 90
Milestone III (DAB)	OCT 90	NOV 90	NOV 90
Organic Support Capability	N/A	NOV 90	NOV 90
Full-Rate Production Contract Award	NOV 90	NOV 90	NOV 90
Prod Verification Test (if required)			
Start	NOV 90	NOV 90	NOV 90
Complete	MAY 91	JAN 91	JAN 91
First Full Rate Production Delivery	OCT 91	MAY 91	MAY 91
Full-Rate Production-II Contract Award	N/A	DEC 91	DEC 91
First Full-Rate Production-II Delivery	N/A	SEP 92	SEP 92
Army TACMS Block IA			
Milestone IV-Preplanned Product Improvement (P3I) Anti-Personnel/Anti-Materiel (APAM)	N/A	FEB 94	FEB 94
P3I APAM Engineering and Manufacturing Development (EMD) Contract Award	N/A	FEB 94	MAR 94

Army TACMS/APAM, December 31, 1995

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

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Critical Design Review	N/A	JUN 95	JUN 95
Production Prove-Out Test (PPT)			
Start	N/A	JUN 95	JUL 95 (Ch-1)
Complete	N/A	JAN 96	MAR 96 (Ch-1)
Pre-Production Qualification Tests (PPQT)			
Start	N/A	JAN 96	MAY 96 (Ch-1)
Complete	N/A	JUN 96	AUG 96 (Ch-1)
BLOCK IA LRIP Decision	N/A	MAR 96	MAY 96 (Ch-2)
BLOCK IA Operational Test & Evaluation			
Start	N/A	MAR 96	AUG 96 (Ch-3)
Complete	N/A	JUN 96	OCT 96 (Ch-3)
BLOCK IA LRIP II Contract Award	N/A	DEC 96	N/A (Ch-2)
BLOCK IA Production Decision	N/A	OCT 97	MAR 97 (Ch-2)
BLOCK IA Full-Rate Production (FRP) Contract Award	N/A	DEC 97	MAR 97 (Ch-2)
BLOCK IA LRIP Delivery	N/A	AUG 97	AUG 97
BLOCK IA Organic Support Capability	N/A	SEP 97	SEP 97
BLOCK IA Depot Service Support	N/A	SEP 97	SEP 97
BLOCK IA Initial Operational Capability (IOC)	N/A	FEB 98	FEB 98
BLOCK IA LRIP II Delivery	N/A	JUN 98	N/A (Ch-2)
BLOCK IA First FRP Delivery	N/A	MAY 99	MAY 98 (Ch-2)

b. (U) Previous Change Explanations --

First full rate production delivery current estimate changed to reflect actual completion date. Multi-year production contract award and first multi-year production delivery current estimate changed because the Army Acquisition Executive did not approve the Multi-year Procurement Program due to inadequate cost savings when compared to annual contracts. Full-rate production-II contract award and first full-rate production-II delivery added as the Multi-year Program was not approved. Organic Support Capability - Nov 90, Depot Service Support - Jun 87, LRIP Delivery - Aug 97, were added to Feb 94 APB. DA Program Review (ASARC IIIA) - Jan 89, and First Full-Rate Production-II Delivery - Sep 92, are shown as actual dates. Funding constraints required a schedule slip in the following milestones:

LRIP II Contract award, P3I APAM production decision, Full-rate production contract award, and first FRP delivery.

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Army TACMS/APAM, December 31, 1995

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

c. (U) Current Change Explanations --

(Ch-1) PRODUCTION PROVE-OUT TEST - Start date changed from Jun 95 in the previous SAR to Jul 95 to reflect the actual start date. PRODUCTION PROVE-OUT TEST - Completion date changed from Jan 96 in the previous SAR to Mar 96 to reflect the estimated completion date. PRE-PRODUCTION QUALIFICATION TESTS - Start date changed from Jan 96 in the previous SAR to May 96 to reflect the actual start date. PRE-PRODUCTION QUALIFICATION TESTS - Completion date changed from Jun 96 in the previous SAR to Aug 96 to reflect the estimated completion date.

(Ch-2) BLOCK IA LRIP DECISION - from Mar 96 in the previous SAR to May 96 to reflect the estimated decision date. BLOCK IA PRODUCTION DECISION - from Oct 97 in the previous SAR to Mar 97 to reflect the favorable change in the estimated decision date. BLOCK IA FULL-RATE PRODUCTION (FRP) Contract Award - from Dec 97 in the previous SAR to Mar 97 to reflect the favorable change in the estimated award date. BLOCK IA LRIP II DELIVERY - from Jun 98 in the previous SAR to N/A to show the elimination of a second LRIP. BLOCK IA FIRST FRP DELIVERY - from May 99 in the previous SAR to May 98 to show favorable schedule change due to elimination of a second LRIP. In addition, the parameters above were changed to reflect the approved ASR that supports the 70 missile buy in FY 96 as a result of the plus-up of \$18M procurement dollars. The ASR also precludes a production break or the need for a second LRIP, and allows a 17-month leadtime for FRP I deliveries.

(Ch-3) BLOCK IA OPERATIONAL TEST & EVALUATION START DATE - Changed from Mar 96 in the previous SAR to Aug 96 due to the schedule change caused by the failure of the contractor/subcontractor to deliver a functional Embedded GPS Receiver (EGR) to be integrated into the manufactured IMGS. The first PPT flight was originally scheduled for Sep 95, but slipped to Dec 95. A change in EGR vendors has brought the program back on track, with the PPT series starting in Feb 96. Block IA OPERATIONAL TEST & EVALUATION COMPLETE DATE - Changed from Jun 96 in the previous SAR to Oct 96 due to the schedule change caused by the failure of the contractor/subcontractor to deliver a functional Embedded GPS Receiver (EGR) to be integrated into the manufactured IMGS. The first PPT flight was originally scheduled for Sep 95, but slipped to Dec 95. A change in EGR vendors has brought

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Army TACMS/APAM, December 31, 1995

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

the program back on track, with the PPT series starting in Feb'96.

d. (U) References --

(U) Production Estimate:

Decision Change Paper (DCP), dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

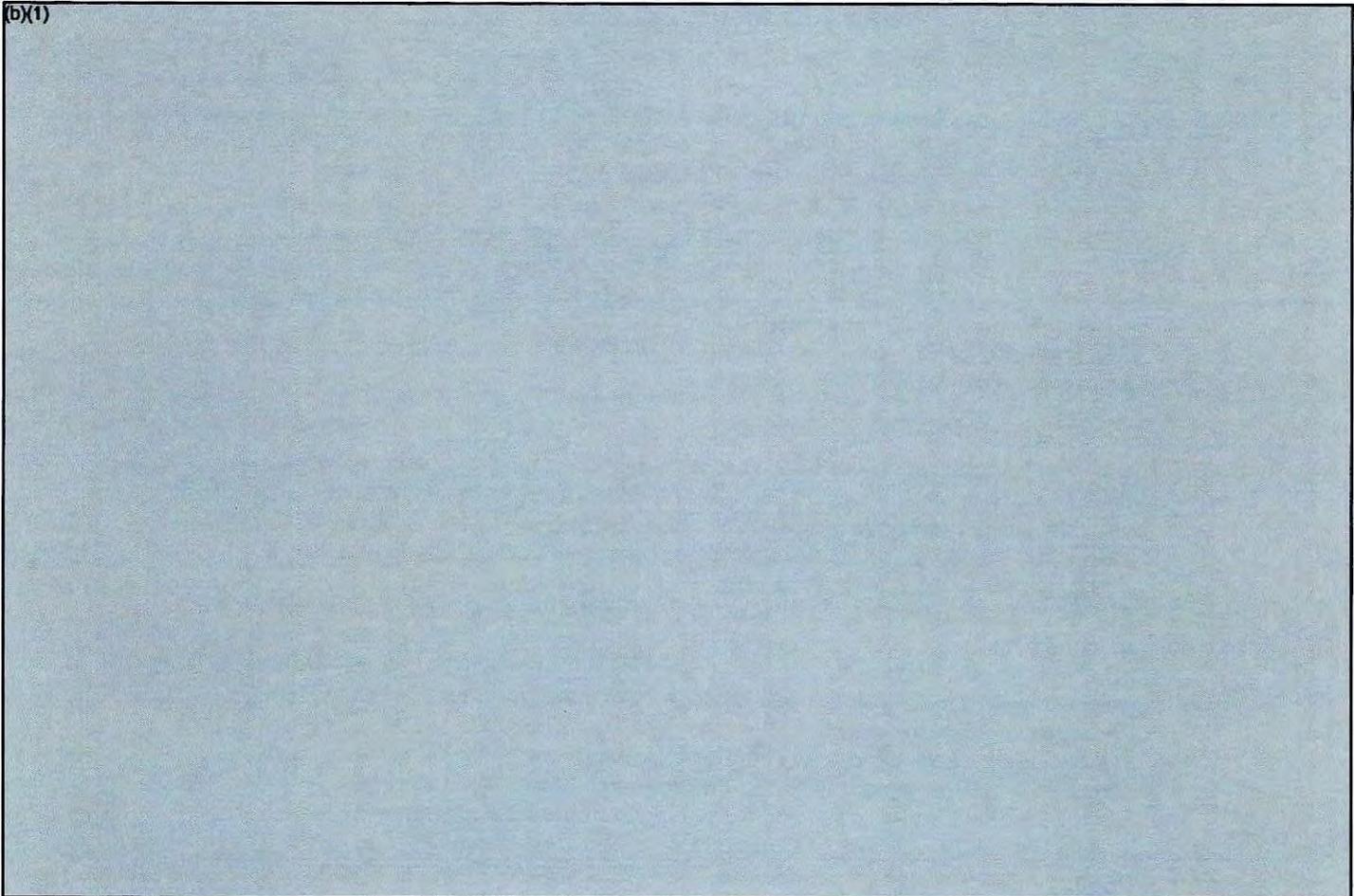
(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 24, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

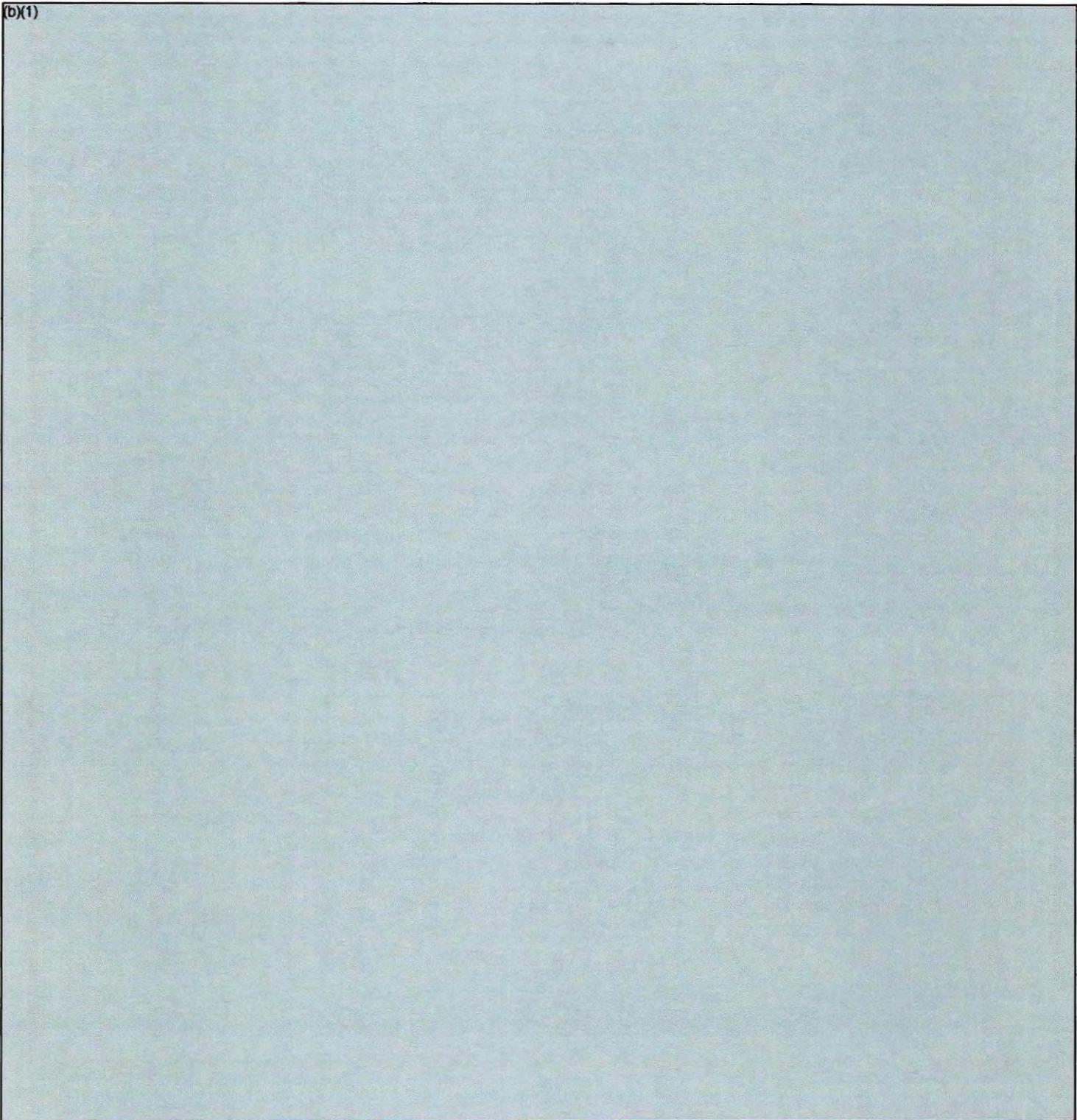


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Army TACMS/APAM, December 31, 1995

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Army TACMS/APAM, December 31, 1995

10c. ~~(S)~~ Performance Characteristics (Cont'd):

c. (U) Current Change Explanations --

(b)(1)



d. (U) References --

(U) Production Estimate:

DCP, dated 15 Sep 90, subject: "Army Tactical Missile System Block I," based on Milestone III (DAB) decision.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 24, 1995.

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

a. (U) Cost --	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	650.6	734.6	732.4
Procurement	846.4	1565.8	1577.5
Flyaway	(821.2)		(1542.2)
Other Weapon Systems	(22.9)		(18.7)
Peculiar Support	(0.0)		(13.4)
Initial Spares	(2.3)		(3.2)
Construction (MILCON)	9.6	10.0	9.9
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1506.6	2310.4	2319.8

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Army TACMS/APAM, December 31, 1995

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1.6	198.4	138.5
Development (RDT&E)	(-89.3)	(-76.7)	(-78.3)
Procurement	(90.0)	(274.6)	(216.2)
Construction (MILCON)	(0.9)	(0.5)	(0.6)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1508.2	2508.8	2458.3

b. (U) Quantity --

Development (RDT&E)	15	18	18
Procurement	<u>1542</u>	<u>2447</u>	<u>2447</u>
Total	1557	2465	2465

Note: Excludes 35 RDTE prototypes from the SAR Baseline and 42 from the Current Estimate that are not considered fully configured.

The current estimate for the Development quantity includes 15 Block I and 3 Block IA missiles. The current estimate for the Procurement quantity includes 1647 Block I and 800 Block IA missiles. The contract price and quantity includes \$1.4M of Navy funds for 3 missiles.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

DCP, dated 15 Sep 90, subject: "Army Tactical Missile System (Block I)," based on Milestone III (DAB) decision.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated March 24, 1995.

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Army TACMS/APAM, December 31, 1995

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	2319.8	2310.4	
(2) Quantity	2465	2465	
(3) Unit Cost	0.941	0.937	0.41
b. (U) Procurement			
(1) Cost (BY91\$)	1577.5	1565.8	
(2) Quantity	2447	2447	
(3) Unit Cost	0.645	0.640	0.75

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Army TACMS/APAM, December 31, 1995

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	561.3	936.4	10.5	1508.2
Previous Changes:				
Economic	+0.6	-33.5	-0.3	-33.2
Quantity	-	+476.9	-	+476.9
Schedule	-	+64.2	-	+64.2
Engineering	+96.7	-	-	+96.7
Estimating	-2.7	+367.0	+0.3	+364.6
Other	-	-	-	-
Support	-	+86.7	-	+86.7
Subtotal	+94.6	+961.3	-	+1055.9
Current Changes:				
Economic	-1.8	-51.6	-	-53.4
Quantity	-	-	-	-
Schedule	-	-1.0	-	-1.0
Engineering	-	-26.9	-	-26.9
Estimating	-	49.0	-	+49.0
Other	-	-	-	-
Support	-	-73.5	-	-73.5
Subtotal	-1.8	-104.0	-	-105.8
Total Changes	+92.8	+857.3	-	+950.1
Current Estimate	654.1	1793.7	10.5	2458.3

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Army TACMS/APAM, December 31, 1995

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

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	650.6	846.4	9.6	1506.6
Previous Changes:				
Quantity	-	+364.0	-	+364.0
Schedule	-	+40.9	-	+40.9
Engineering	+83.4	-	-	+83.4
Estimating	-1.6	+291.8	+0.3	+290.5
Other	-	-	-	-
Support	-	+64.2	-	+64.2
Subtotal	+81.8	+760.9	+0.3	+843.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-18.9	-	-18.9
Estimating	-	33.2	-	+33.2
Other	-	-	-	-
Support	-	-44.1	-	-44.1
Subtotal	-	-29.8	-	-29.8
Total Changes	+81.8	+731.1	+0.3	+813.2
Current Estimate	732.4	1577.5	9.9	2319.8

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Increase due to adding Blk IA P3I program.
Correction of reported variance shown as Engineering, should be Estimating.

Estimating: Adjustment for current and prior inflation.
Correction of reported variance shown as Engineering, should be Estimating. Revised estimate to add FY 97, and finalize Block IA efforts.

Army TACMS/APAM, December 31, 1995

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

Procurement

Economic: Revised escalation indices. Adjustment for a negative program change.
 Quantity: Increase of 800 units from 1647 to 2447.
 Schedule: Allocation due to increase of 800 units from 1647 to 2447. Stretchout of program and additional fixed costs for overhead associated with production stretchout.
 Engineering: Increase due to adding BLK IA P3I program.
 Estimating: Adjustment for current and prior inflation. Refined estimate for BAT carrier and allocation of costs increase for 800 units from 1647 to 2447. Reduction of FY 94 funds appropriated but not authorized. Adjustment for learning curve inefficiencies.
 Support: Adjustment for current and prior inflation. Increased initial spares as result of quantity increase. Increase of fielding costs. Increase of support equipment. Decreased requirements for initial spares and first destination transportation costs.

MILCON

Economic: Revised escalation indices.
 Estimating: Adjustment for current and prior inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.8
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-58.5
Adjustment for negative program change. (Economic)	N/A	+6.9
Adjustment for Current & Prior Inflation. (Estimating)	+11.1	+14.3
Correction of Dec 94 SAR to transfer Block II to ATACMS/BAT SAR. (Estimating)	+51.7	+83.0
(Support)	-51.7	-83.0

Army TACMS/APAM, December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Compressed procurement buy profile from an eight-year buy to a seven-year buy. (Schedule)	--	-1.0
Revised estimate due to higher production rates due to the compressed procurement buy. (Estimating)	-25.5	-43.3
Decreased engineering services requirements as a result of the Cost Reduction Plan. (Engineering)	-18.9	-26.9
Revised estimate for MLRS reprogramming. (Estimating)	-2.2	-2.5
Revised estimate to adjust prior year to actual. (Estimating)	-1.9	-2.5
Adjustment for Current & Prior Inflation. (Support)	+0.2	+0.2
Increase in initial spares requirement for Block IA. (Support)	+0.9	+1.9
Refinement of support estimate. (Support)	+6.5	+7.4
 Procurement Subtotal	 ----- -29.8	 ----- -104.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.159	-0.049	-0.096	0.026	0.143	-1.234	--	0.020	-1.190	0.969

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.969	-0.035	-0.164	0.026	0.028	0.168	--	0.005	0.028	0.997

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

a. (U) RD&E --

(U) F3I FMD (IA) Missiles:
 LORAL Vought Sys Corp, Dallas, TX
 DAAH01-94-C-0002, CPIF
 Award: March 31, 1994
 Definitized: March 31, 1994

Initial Contract Price
Target Ceiling Qty

\$52.4 N/A 0

Current Contract Price
Target Ceiling Qty
 \$52.4 N/A 0

Estimated Price At Completion
Contractor Program Manager
 \$52.4 \$53.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.4	\$-1.1
Cumulative Variances To Date (12/31/95)	\$-2.4	\$-5.4
Net Change	\$-2.8	\$-4.3

Explanation of Change:

The unfavorable cost and schedule variances are not considered significant.

b. (U) Procurement --

(U) FRP IV Missiles:
 LORAL Vought Sys Corp, Dallas, TX
 DAAH01-92-C-0038, FFP
 Award: December 23, 1993
 Definitized: December 23, 1993

Initial Contract Price
Target Ceiling Qty

\$116.9 N/A 258

Current Contract Price
Target Ceiling Qty
 \$116.9 N/A 258

Estimated Price At Completion
Contractor Program Manager
 \$116.9 \$116.9

Army TACMS/APAM, December 31, 1995

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

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

Explanation of Change: None.

The contract price and quantity includes \$1.4M of Navy funds for 3 missiles. This contract was completed in Feb 96. This is the last time it will appear in the SAR.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>FRP V Missiles:</u> LORAL Vought Sys Corp, Dallas, TX DRAA01-92-C-0038, FFP Award: November 15, 1994 Definitized: November 15, 1994	\$78.3	N/A	148

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$78.3	N/A	148	\$78.3	\$78.3

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

Explanation of Change: None.

This contract is Firm Fixed Price. The contract is expected to be completed Feb 97 at target price with no adverse effects on overall program.

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

a. (U) Program Status --

- (1) Percent Program Completed: 70.8% (17 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 73.6% (\$1808.6 / \$2458.3)

Army TACMS/APAM, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY80-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2003)	<u>Total</u>
RDT&E	622.9	26.3	4.9	-	654.1
Procurement	1027.6	121.3	93.8	551.0	1793.7
MILCON	10.5	-	-	-	10.5
O&M	-	-	-	-	-
Total	1661.0	147.6	98.7	551.0	2458.3

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY91 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

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

1980				14.6	9.4	9.4	9.4	10.6
1981				19.9	14.0	14.0	14.0	10.6
1982				15.8	11.8	11.8	11.8	7.6
1983				7.7	6.0	6.0	6.0	4.0
1984				62.6	50.2	50.2	50.2	3.8
1985				92.3	76.4	76.4	76.4	3.4
1986				125.2	106.6	106.6	106.6	2.8
1987				87.1	76.5	76.5	76.5	2.7
1988				109.6	100.1	100.1	100.1	3.0

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

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1989				77.7	73.8	73.8	73.8	4.2
1990				36.9	36.4	36.4	34.0	4.1
1991								4.3
1992								3.0
1993								2.4
1994				23.2	25.4	25.4	25.3	2.0
1995				32.5	36.3	36.3	23.1	1.9
1996				23.1	26.3	11.9	0.7	2.0
1997				4.2	4.9			2.2
Subtot	18			732.4	654.1	634.8	607.9	

Appropriation: 2032 Missile Procurement, Army

1988				3.7	3.5	3.5	3.5	3.0
1989	66	0.3	63.5	72.9	72.4	72.4	72.4	4.2
1990	104	3.1	94.4	100.7	103.1	103.1	102.8	4.1
1991	373		218.7	219.8	230.5	229.8	226.7	4.3
1992	300		159.4	160.1	171.6	171.6	170.6	3.0
1993	351		172.2	174.3	190.6	190.6	187.3	2.4

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Army TACMS/APAM, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

1994	255		127.4	128.4	143.1	142.0	121.1	2.0
1995	148		97.6	99.0	112.8	107.6	11.9	1.9
1996	120	3.6	99.7	104.9	121.3	38.3	0.2	2.0
1997	97	0.3	77.4	79.2	93.8			2.2
1998	100		79.2	81.1	98.1			2.2
1999	126		82.2	83.6	103.4			2.3
2000	120		78.1	79.6	100.6			2.2
2001	140		85.3	87.0	112.4			2.2
2002	147		99.8	93.4	123.3			2.2
2003				9.8	13.2			2.2
Subtot	2447	7.3	1534.9	1577.5	1793.7	1058.9	896.5	

Appropriation: 2050 Military Construction, Army

1991				4.8	5.0	5.0	5.0	4.3
1992				5.1	5.5	5.5	5.5	3.0
Subtot				9.9	10.5	10.5	10.5	
Grand Total	2465	7.3	1534.9	2319.8	2458.3	1704.2	1514.9	

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Army TACMS/APAM, December 31, 1995

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

Expenditures and obligations reflect Program Office Records as of 31 Dec 95.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	60/50
	Procurement	1419/1422

The fully configured end items for RDT&E are 15 Block I and 3 Block IA RDT&E units. The remaining RDT&E units will be used for testing as non-fully configured items.

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development	Current	Latest Approved
	<u>Estimate</u>	<u>Estimate</u>	<u>Threshold</u>
@ Qty 2447 - @ Peak Rate: 38.0/mo			
FY 91 Base-Year \$	0.462	0.627	0.658
Then Year \$	0.539	0.738	0.775
@ Qty 170 (1st three years) - @ Peak Rate: 38.0/mo			
FY 91 Base-Year \$	0.587	0.958	1.006
Then Year \$	0.673	0.966	1.014

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Army TACMS is fired from the modified MLRS M270 launcher within the MLRS organizational units. Army TACMS Operating and Support (O&S) costs are included in the O&S section of the MLRS SAR and are from the Aug 95 Army TACMS Program Office Estimate. Manning/crew support is provided by the MLRS organizational unit. Army TACMS is a certified round. Maintenance determined on the basis of periodic surveillance tests taken from Aug 95 Baseline Cost Estimate.

b. (U) Costs -- None.

Sustainment Average Unit Cost for the missile is .005. There are no costs reflected for fielding.

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RGS:DD-COMP(05A)823)
PROGRAM: V-22 (OSPREY)

AS OF DATE: December 31, 1995

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OPERATIONAL HISTORY

DEC 27 1995 11

1. Designation and Nomenclature (Preferred Name):
V-22 Joint Services Advanced Vertical Lift Aircraft (Osprey)
2. DoD Component: Navy

Joint Participants:
USMC, USN, USSOCOM, USAF
3. Responsible Office and Telephone Number:
PROGRAM EXECUTIVE OFFICE (PMA-275) COL Robert D. Garner, USMC
AIR ASW ASSAULT AND SPECIAL MISSION Assigned: July 16, 1993
1421 JEFFERSON DAVIS HIGHWAY AV 664-4310 COMM (703) 604-4310
ARLINGTON, VA 22243-5120

4. Program Elements/Procurement Line Items:

RDT&E:

- PE 0603203N
- PE 0603256N (Shared) Navy Proj. W1557
Project 642973
- PE 0604222A
- PE 0604262N (Shared) Navy MLR Proj. W2088
Project W1425, H1425
- PE 1110011F (Shared) Proj. 643752
- PE 1160404BB (Shared) Proj. 643752

~~No Security Objection~~
~~to Open Public~~
~~Access~~
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Dept. of the Navy

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V-22 (OSPREY), December 31, 1995

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

PROCUREMENT:
APPN 1506 ICN 016300 (Navy)
MILCON:
PE M62470

5. Related Programs: None.

6. Mission and Description:

The V-22 Osprey is a Department of the Navy program for the purpose of developing, testing, evaluating, procuring and fielding a tilt rotor, vertical takeoff and landing aircraft for Joint Service application. The V-22 program is designed to provide an aircraft to meet the amphibious/vertical assault needs of the Marine Corps, the strike rescue needs of the Navy, and the special operations needs of the Air Force. The V-22 will replace the CH-46 and CH53A/D in the Marine Corps, and the HH-3A in the Navy, and will supplement H-53, H-60 and C-130 in the Air Force. The V-22 will be capable of flying over 2100 nautical miles with a single refueling, giving the services the advantage of a VSTOL aircraft that could rapidly self-deploy to any location in the world.

7. Program Highlights:

a. Significant Historical Developments --
Preliminary Design was initiated in April 1983 with Bell-Boeing. Allison Gas Turbine Division of General Motors Corp was selected for engine design. The V-22 program went through Milestone II (DSARC II) in April 1986 and was approved for entry into Full Scale Development on May 1, 1986, at which time the FSD contracts with Bell-Boeing and Allison were signed. First flight of aircraft #1 occurred March 29, 1989. The Secretary of Defense removed funding for the V-22 program in April 1989. Congressional action funded the program in FY90, FY91, FY92, and FY93. DT IIA and B were completed. A June 11, 1991 incident with Aircraft #5 resulted in a loss of the aircraft. On July 20, 1992, Aircraft #4 with a crew of seven crashed into the Potomac River near Quantico, Va., due to failure of a section of interconnecting drive shaft. Investigation indicated the failure was not related to tiltrotor design technology. On October 22, 1992, the FSD airframe contract was terminated. The V-22 FSD program closed out with 764 flight test hours in 645 flights. On November 18, 1994 aircraft #2 was removed from the flight test program. A letter contract was awarded to Bell-Boeing on October 22, 1992 (definitized May 1994) to begin an Engineering and Manufacturing Development Program (EMD). A letter contract was awarded to Allison on December 30, 1992 (definitized September 1993) for the associated EMD engines. A Preliminary Design Review (PDR) and a Critical Design Review (CDR) were successfully completed on April 28, 1994 and December 14, 1994, respectively. A Defense Acquisition Board (DAB)

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V-22 (OSPREY), December 31, 1995

7a. Program Highlights (Cont'd):

review was held on September 13, 1994. 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.

b. Significant Developments Since Last Report --

The fuselage sections of aircraft #7 were successfully mated on August 1, 1995. The Acquisition Strategy Report (ASR) and the Acquisition Program Baseline Agreement (APBA) were approved on August 21, 1995. The CV-22 Phase I contract modification was awarded on August 25, 1995. The Fatigue Test Article and the Static Test Article to failure contract modification was awarded on September 11, 1995. The Test and Evaluation Master Plan (TEMP) was approved on September 28, 1995. OTIIB testing was completed in October 1995. Specification values for engine horsepower and fuel flow were achieved on October 1, 1995. All system integration labs (SIL) and the flight control systems integration rig (FCSIR) are fully populated and operational. Mating of aircraft #7 fuselage and wing was completed on December 4, 1995.

Under the Engineering and Manufacturing Development (EMD) program, the V-22 will still replace the CH-46 and CH53A/D in the Marine Corps, augment the HH-60H in the Navy, and will supplement USSOCOM aviation assets. The V-22 Osprey is expected to satisfy the mission requirement.

c. Changes Since As Of Date --

Commander Operational Test and Evaluation Force and Commander Air Force Operational Test and Evaluation Center completed the second V-22 operational assessment (OI-IIB) and, in the final report dated January 22, 1996, found the MV-22 (Marine Corps variant) is potentially operationally effective and potentially operationally suitable. The CV-22 (USSOCOM) configuration is also potentially operationally effective and potentially operationally suitable; however, concerns highlighted in this report with respect to CV-22 aircraft performance, terminal/objective area operations and avionics may limit its effectiveness in certain intended operating environments. The report recommended proceeding with the Advanced Acquisition Contract (AAC) and Low Rate Initial Production (LRIP). All exit criteria have been met.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline dated August 21, 1995. There are no Mumm McCurdy unit cost breaches that are applicable to this program.

V-22 (OSPREY), December 31, 1995

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone 0 (DEPSECDEF MEMO)	DEC 81	DEC 81	DEC 81
Milestone I (DSARC I)	DEC 82	DEC 82	DEC 82
Preliminary Design Contract Award	APR 83	APR 83	APR 83
Milestone II (DSARC II)	APR 86	APR 86	APR 86
FSD Contract Award	MAY 86	MAY 86	MAY 86
Production Contract Award (Long Lead AAC)	JAN 89	JAN 89	MAR 89
Operational Testing IIA	AUG 89	N/A	N/A
Milestone IIIA (USMC Pil Prod)	DEC 89	N/A	N/A
Operational Testing IIB	AUG 90	N/A	N/A
Milestone IIIB (All Serv Ltd Prod)	DEC 90	N/A	N/A
Operational Testing IIIC (OPEVAL)	AUG 91	N/A	N/A
Operational Testing IID (AF OPEVAL)	AUG 91	N/A	N/A
First Fleet Deliveries	DEC 91	N/A	N/A
Milestone IIIC (USN/MC/A Full Production)	DEC 91	N/A	N/A
USMC IOC (5 Acft Trng Det)	SEP 92	N/A	N/A
USAF IOC (6 Acft Mission Capable)	SEP 94	N/A	N/A
USA IOC (First Operational Company Equipped)	SEP 95	N/A	N/A
EMD Airframe Contract Award	N/A	OCT 92	OCT 92(Ch-1)
EMD Engine Contract Award	N/A	DEC 92	DEC 92(Ch-1)
SRR Complete	N/A	AUG 93	AUG 93
EMD Trade Studies Complete	N/A	N/A	JAN 94
PDR Complete	N/A	APR 94	APR 94
MS II Plus Program Review	N/A	SEP 94	SEP 94
CDR Complete	N/A	DEC 94	DEC 94
DAB LRIP REVIEW	N/A	FEB 97	FEB 97(Ch-1)
MV-22 TECHEVAL			
Start	N/A	FEB 99	FEB 99(Ch-1)
Complete	N/A	APR 99	APR 99(Ch-1)
MV-22 OPEVAL			
Start	N/A	MAY 99	MAY 99(Ch-1)
Complete	N/A	DEC 99	DEC 99(Ch-1)
LRIP 1 Contract Award (Long lead \$)	N/A	FEB 96	APR 96(Ch-1)
LRIP 1 First Delivery	N/A	APR 99	APR 99(Ch-1)
LRIP 2 Contract Award (Long lead \$)	N/A	FEB 97	FEB 97(Ch-1)
LRIP 2 First Delivery	N/A	FEB 00	FEB 00(Ch-1)
LRIP 3 Contract Award (Long Lead \$)	N/A	FEB 98	FEB 98(Ch-1)
LRIP 3 First Delivery	N/A	NOV 00	NOV 00(Ch-1)
LRIP 4 Contract Award (Long Lead \$)	N/A	FEB 99	FEB 99(Ch-1)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
LRIP 4 First Delivery	N/A	OCT 01	OCT 01(Ch-1)
Full Rate Production Contract Award (Long lead \$)	N/A	FEB 00	FEB 00(Ch-1)
Physical Configuration Audit (PCA)	N/A	DEC 99	DEC 99(Ch-1)
MS III	N/A	DEC 00	DEC 00(Ch-1)
MV-22 IOC	N/A	APR 01	APR 01(Ch-1)
GSD	N/A	MAR 07	MAR 07(Ch-1)
Modification to EMD Contract to Include CV-22 Efforts	N/A	JUN 95	AUG 95(Ch-1)
CV-22 SRR	N/A	JUN 96	SEP 96(Ch-1)
CV-22 PDR	N/A	DEC 96	MAY 97(Ch-1)
CV-22 CDR	N/A	AUG 97	FEB 98(Ch-1)
CV-22 Production Contract Award (Long lead \$)	N/A	FEB 00	FEB 00(Ch-1)
CV-22 Flight Test			
Start	N/A	MAR 00	OCT 99(Ch-1)
Complete	N/A	AUG 01	SEP 01(Ch-1)
CV-22 IOT&E			
Start	N/A	SEP 01	OCT 01(Ch-1)
Complete	N/A	MAR 02	MAR 02(Ch-1)
CV-22 First Production Delivery	N/A	MAR 03	MAR 03(Ch-1)
IOC-CV	N/A	OCT 05	OCT 05(Ch-1)

Milestone 0 through USA IOC (First Operational Company Equipped) reflects the FSD program which was terminated in April 1989.

b. Previous Change Explanations --

Production Contract award (long lead AAC) date reflects contractual agreement. Impact of production termination, 19 Apr 89. Army milestones no longer applicable. OTIIA added back into the schedule. Schedule milestones remain "not applicable" for future schedule milestones due to production termination.

c. Current Change Explanations --

(Ch-1) Milestones were added to reflect the approved Acquisition Program Baseline dated August 21, 1995.

9d. Schedule (Cont'd):

d. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
Approved Acquisition Program Baseline dated August 21, 1995.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Folded				
Length (ft)	62.24	N/A / N/A	N/A	N/A
Width (ft)	18.42	N/A / N/A	N/A	N/A
Height (ft)	17.98	N/A / N/A	N/A	N/A
Unfolded				
Length (ft)	57.33	N/A / N/A	N/A	N/A
Width (ft)	83.83	N/A / N/A	N/A	N/A
Height (ft)	21.73	N/A / N/A	N/A	N/A
Empty Weight (lbs)	31786	N/A / N/A	N/A	N/A
Readiness, Msn	70	N/A / N/A	N/A	N/A
Capability Rate (% MC)				
Mission Complete Probability, Rate (MFHMA Design Controllable) (%)	98	N/A / N/A	N/A	N/A
Direct Maintenance Manhours per Flight Hour, Design Controllable:				
Org Level, Unscheduled (corrective)	7.0	N/A / N/A	N/A	N/A
Org Level, Scheduled (preventive)	2.5	N/A / N/A	N/A	N/A
World-wide Self-Deployment (nm) (minimum distance)	2100	N/A / N/A	N/A	N/A
Continuous Cruise Speed (kts)	250	N/A / N/A	N/A	N/A
Dash Speed (kts)	275	N/A / N/A	N/A	N/A
Instantaneous G-Loading				

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Plus	4.0	N/A	/ N/A	N/A	N/A	
Minus	-1.0	N/A	/ N/A	N/A	N/A	
Troop Capacity	24	N/A	/ N/A	N/A	N/A	
External Cargo (lbs)	10000	N/A	/ N/A	N/A	N/A	
MV-22						
Cruise Speed (kts)	N/A	270	/ 240	TBD	240	(Ch-2)
Mission Radius (NM)						
Land Trooplift	N/A	200X1	/ 200X1	TBD	273X1	(Ch-2)
Land External	N/A	110X1	/ 50X1	TBD	54X1	(Ch-2)
Sea Trooplift	N/A	110X2	/ 50X2	TBD	69X2	(Ch-2)
Sea External	N/A	110X1	/ 50X1	TBD	104X1	(Ch-2)
Payload						
Troops	N/A	24	/ 24	TBD	24	(Ch-1)
External Lift (lbs)	N/A	15,000	/ 10,000	TBD	10,000	(Ch-1)
Aerial Refuel Capable	N/A	yes	/ yes	TBD	yes	(Ch-1)
Self-Deployment (nm)	N/A	2100 w/ no refuel	/ 2100 w/1 serial refuel	TBD	2565 w/1 serial refuel	(Ch-1)
Shipboard Compatible	N/A	yes	/ yes	TBD	yes	(Ch-1)
V/STOL Capable	N/A	yes	/ yes	TBD	yes	(Ch-1)
Survivability (mm API @90°vel)	N/A	14.5	/ 12.7	TBD	12.7	(Ch-1)
Reliability						
MTBF	N/A	>2.0	/ >1.4	TBD	1.4	(Ch-1)
Mission (%)	N/A	>85	/ >85	TBD	85	(Ch-2)
CV-22						
Cruise Speed (kts)	N/A	250	/ 230	TBD	230	(Ch-1)
Mission Radius (nm)	N/A	750	/ 500	TBD	500	(Ch-2)
Payload - Troops	N/A	24	/ 18	TBD	18	(Ch-1)
Aerial Refuel Capable	N/A	yes	/ yes	TBD	yes	(Ch-1)
Self-Deployment (nm)	N/A	2100 w/0 serial refuel	/ 2100 w/1 serial refuel	TBD	2487 w/1 serial refuel	(Ch-1)
Shipboard Compatible	N/A	yes	/ yes	TBD	yes	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Operational Environment	N/A	100' / TF/TA, Day/Night, t, VMC/IMC	300' / TF/TA, Day/Night, t, VMC/IMC	TBD	300' / TF/TA, Day/Night, t, VMC/IMC	(Ch-1)
Precision Navigation (diameter @ MAX Combat Radius)	N/A	Locate LZ W/IN 1 Rotor	Locate LZ W/IN 2X Rotor	TBD	Locate LZ W/IN 2X Rotor	(Ch-1)
Reliability MTBF	N/A	>=2.0	>=1.4	TBD	1.4	(Ch-1)
Weapon System (%)	N/A	>=84	>=77	TBD	77	(Ch-1)

Performance characteristics for Folded Length through External Cargo (lbs) reflects the program which was terminated in 1989. The current EMD contract specifications do not include the USSOCOM requirements.

b. Previous Change Explanations --

Impact of production program termination. "Not applicables" reflect the termination of production.

c. Current Change Explanations --

(Ch-1) The V-22 Osprey characteristics were added to reflect the approved Acquisition Program Baseline dated August 21, 1995.

(Ch-2) These performance characteristics represent the EMD Amphibious Troops Lift, EMD Amphibious Ext Lift, EMD Land Assault Troop Lift, EMD Land Assault Ext Lift, EMD Special Operations/Special Warfare, EMD Airspeed, and EMD Mission Capable Rate. They were renamed in the approved Acquisition Program Baseline dated August 21, 1995.

d. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
Approved Acquisition Program Baseline dated August 21, 1995.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	2443.7	5562.5	5581.6
Procurement	20493.1	21441.7	21290.0
Flyaway	(15517.1)		(16504.7)
Other Weapon Systems Cost	(3299.6)		(0.0)
Peculiar Support	(0.0)		(2976.0)
Initial Spares	(1676.4)		(1809.3)
Construction (MILCON)	136.2	24.4	24.4
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	23073.0	27028.6	26896.0
Escalation	6589.3	25926.8	19703.7
Development (RDT&E)	(181.5)	(1388.5)	(1315.4)
Procurement	(6371.1)	(24515.2)	(18370.1)
Construction (MILCON)	(36.7)	(23.1)	(18.2)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	29662.3	52955.4	46599.7
b. Quantity --			
Development (RDT&E)	0	11	0
Procurement	<u>913</u>	<u>523</u>	<u>523</u>
Total	913	534	523

Note: Excludes 6 RDTE prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

Note: The LRIP quantities are as follows: 4 (FY97), 5 (FY98), 7 (FY99), and 9 (FY00).

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
FY 1988/89 President's Budget.

Approved Program:
Approved Acquisition Program Baseline dated August 21, 1995.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UGR</u> <u>Baseline</u> (AUG 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY86\$)	26896.0	27028.6	
(2) Quantity	523	523	
(3) Unit Cost	51.426	51.680	-0.49
b. Procurement			
(1) Cost (BY86\$)	21290.0	21441.7	
(2) Quantity	523	523	
(3) Unit Cost	40.707	40.998	-0.71

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	+3.2	-1.3	+0.1	+2.0
Quantity	-77.0	+15143.2	-	+15066.2
Schedule	+0.6	-	+7.8	+8.4
Engineering	-	-	-	-
Estimating	+4399.0	-101.1	-133.3	+4164.6
Other	-	-	-	-
Support	-	+4051.9	-	+4051.9
Subtotal	+4325.8	+19092.7	-125.4	+23293.1
Current Changes:				
Economic	-98.4	-5986.9	-4.9	-6090.2
Quantity	-	-	-	-
Schedule	-	-43.0	-	-43.0
Engineering	-	-	-	-
Estimating	44.4	-34.0	-	+10.4
Other	-	-	-	-
Support	-	-232.9	-	-232.9
Subtotal	-54.0	-6296.8	-4.9	-6355.7
Total Changes	+4271.8	+12795.9	-130.3	+16937.4
Current Estimate	6897.0	39660.1	42.6	46599.7

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

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	2443.7	20493.1	136.2	23073.0
Previous Changes:				
Quantity	-72.9	+1076.8	-	+1003.9
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+3191.7	-82.8	-111.9	+2997.0
Other	-	-	-	-
Support	-	-45.4	-	-45.4
Subtotal	+3118.8	+948.6	-111.9	+3955.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	3.5	-	+3.5
Engineering	-	-	-	-
Estimating	19.1	-9.9	-	+9.2
Other	-	-	-	-
Support	-	-145.3	-	-145.3
Subtotal	+19.1	-151.7	-	-132.6
Total Changes	+3137.9	+796.9	-111.9	+3822.9
Adjustments	-	-	+0.1	+0.1
Current Estimate	5581.6	21290.0	24.4	26896.0

b. Previous Change Explanations --

RDT&E

- Economic:** Revised escalation rates offset by impact of program funding termination and adjustment for negative program change.
- Quantity:** Impact of program funding termination. FY91 Congressional appropriation.
- Schedule:** Air Force simulator modification rescheduled one year.
- Engineering:** Air Force deletion of IDADS and addition of EW analysis offset by impact of program funding termination.

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

Estimating: Reprogrammings, budget adjustments, reprice of Air Force ECP offset by program funding termination. SBIR assessment. Contract price escalation clause adjustment and correction of error. Air Force transfer within program element. Congressional appropriation of FY92 funds and accounting adjustments. Termination of FSD airframe contract, PBD707, and dascope of ENSIP effort on engine contract. Rephasing of EMD efforts and inclusion of NV-22 EMD efforts and USSOCOM unique RDT&E requirements. Rephase and adjustments for CV-22, EMD Airframe contract definitization, Fatigue Test Article, Static Test Article to failure, COEA, risk assessment/reduction, Congressional undistributed reductions.

Procurement

Economic: Revised escalation rates offset by impact of program funding termination.

Quantity: Army withdrawal, Air Force reduction in quantity offset by impact of program funding termination. Total program quantity increase from 0 to 523.

Schedule: Navy and Air Force rephase buy schedule offset by impact of program funding termination.

Estimating: Reprice to reflect lower quantities, CFE to CFE changes, and tooling refinements offset by impact of program funding termination. Congressional appropriation of advanced procurement. Congressional reprogramming from APN to R&D. General reprogramming and budget adjustments. Reprogramming to other Navy programs and expired funds. Impact of termination of FSD contract. Inflation offsets.

Support: Army withdrawal and impact of program funding termination. Navy and Air Force increases associated with quantity increase.

MILCON

Economic: Revised escalation rates offset by impact of program funding termination.

Schedule: Air Force rephase of facilities offset by impact of program funding termination.

Estimating: Estimating refinements and impact of program funding termination, and adjustments for current and prior year inflation. Addition of operational sites due to quantity increase.

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

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-98.4
Adjustment for Current and Prior Inflation. (Defense Agency) (Estimating)	+0.1	+0.1
Additional engineering technical support for CV-22. (Defense Agency) (Estimating)	+0.1	+0.1
Adjustment for Current and Prior Inflation. (Navy) (Estimating)	+19.4	+26.1
Adjustment for FY94/prior appropriations, reprogrammings, and actual updates. (Navy) (Estimating)	-48.2	-52.1
V-22 Specific and undistributed Congressional reduction. (Navy) (Estimating)	-18.9	-25.7
Reductions due to F-16 Jordanian recision. (Navy) (Estimating)	-2.3	-3.1
Cost Reduction Initiatives and increased termination liability for projected overruns (transferred from APN support costs). (Navy) (Estimating)	+90.0	+127.0
Various DBOF adjustments. (Navy) (Estimating)	-21.1	-28.0
RDT&E Subtotal	<u>+19.1</u>	<u>-54.0</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-6016.9
Economic adjustment for negative program change. (Navy) (Economic)	N/A	+30.0
Acceleration of annual procurement buy profile related to movement of 2 aircraft from FY21 into the FYDP. (Navy) (Schedule)	+12.8	-26.5
Adjustment related to acceleration of annual Navy procurement buy profile. (Air Force) (Schedule)	-9.3	-16.5
Adjustment for Current and Prior Inflation. (Navy) (Estimating)	+1.1	+1.8

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Movement of GFE to CFE, reduction in ECO, and changes in advanced procurement due to schedule change, and inclusion of Block Upgrade. (Navy) (Estimating)	-10.5	-34.8
Movement of GFE to CFE. (Air Force) (Estimating)	-0.5	-1.0
Support changes associated with inclusion of Defense Science Board recommendations (defer I-Level & D-Level 2 yrs & 3 yrs respectively) and other refinements to support approved PGSE, Training, Pubs, ILS and Production Engineering Support. (Navy) (Support)	-98.3	-158.5
Initial Spares. (Navy) (Support)	-52.0	-82.2
PGSE, Training, Pubs, ILS and Production Engineering Support. (Air Force) (Support)	+4.4	+6.9
Initial Spares. (Air Force) (Support)	+0.6	+0.9
Procurement Subtotal	<u>-151.7</u>	<u>-6296.8</u>
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-4.9

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
40.18	-4.97	-6.48	0.83	--	0.03	--	2.90	-7.69	32.49

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
32.49	-11.64	53.03	-0.07	--	7.98	--	7.30	56.60	89.10

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

a. RDT&E --

Technology Effort:
Bell-Boeing, Fort Worth, TX
N00019-91-C-0172, CPFF
Award: June 10, 1991
Definitized: May 14, 1992

Initial Contract Price		
Target	Ceiling	Qty
\$75.5	\$0.0	0

Current Contract Price		
Target	Ceiling	Qty
\$109.1	\$0.0	0

Estimated Price At Completion	
Contractor	Program Manager
\$105.5	\$109.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-5.3	\$-3.3
Cumulative Variances To Date (12/31/95)	\$-3.2	\$-4.1
Net Change	\$2.1	\$-0.8

Explanation of Change:

Unfavorable cost variance improved slightly due to completion of some tests for less than the amount planned. Testing is the area with the greatest cost growth to date, primarily because of subcontractor problems with the coupling vendor.

Unfavorable schedule variance deteriorated slightly because of several hardware failures experienced during testing. Testing is the primary area behind schedule.

R&D (Airframe):
Bell-Boeing, Arlington, VA
N00019-93-C-0006, CPAF
Award: October 22, 1992
Definitized: May 3, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$2650.0	\$0.0	4

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15. Contract Information (Cont'd):

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$2777.9	\$0.0	4	\$2777.9	\$2857.9
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/31/95)			\$-26.9	\$-34.9
Net Change			\$-30.6	\$-47.5
			\$-3.7	\$-12.6

Explanation of Change:

Unfavorable cost variance worsened slightly due to higher tooling fabrication and design costs, rework, and subcontract cost growth in avionics, systems, and systems and integrated wiring systems areas. Systems, systems and integrated wiring systems, center fuselage, and forward fuselage are the areas with the largest cost growth to date.

Unfavorable schedule variance deteriorated primarily because of auxiliary power unit problems in the propulsion element, and advanced mission computer delays in the avionics element. The propulsion, avionics, systems, and systems and integrated wiring systems areas have the most unfavorable schedule variances to date.

<u>EMD (Engine):</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Allison Engine Co., Indianapolis, IN N00019-93-C-0052, GPIF Award: December 30, 1992 Definitized: September 28, 1993	\$140.9	\$0.0	13

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$144.9	\$0.0	13	\$148.8	\$151.5
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (12/31/95)			\$-0.1	\$-2.7
Net Change			\$-6.7	\$-4.5
			\$-6.6	\$-1.8

Explanation of Change:

Cost variance worsened due to greater than anticipated costs for design and development hardware, additional labor cost associated with the late delivery of material and test delays, and increased labor rates.

Unfavorable schedule variance deteriorated due to problems in the

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15. Contract Information (Cont'd):

procurement and manufacturing of test hardware, rework, and test delays. Schedule revisions have been implemented and the contractor is ahead of the schedule recovery plan submitted in November 1995.

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

a. Program Status --

- (1) Percent Program Completed: 37.5% (15 yrs/40 yrs)
- (2) Percent Program Cost Appropriated: 11.7% (\$5451.2 / \$46599.7)

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

<u>Appropriation</u>	<u>Prior Years</u> (FY82-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2021)	<u>Total</u>
RDT&E	4434.7	733.7	576.8	1151.8	6897.0
Procurement	231.4	46.6	602.3	38779.8	39660.1
MILCON	4.8	-	-	37.8	42.6
OGM	-	-	-	-	-
Total	4670.9	780.3	1179.1	39969.4	46599.7

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

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

1982				1.5	1.3	1.3	1.2	7.6
1983				37.2	34.4	34.4	34.4	4.9
1984				88.7	85.0	85.0	84.9	3.8
1985				174.4	172.4	172.4	171.9	3.4

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1986				515.2	523.9	523.9	523.7	2.8
1987				402.7	421.6	421.6	420.1	2.7
1988				375.0	405.8	405.8	401.9	3.0
1989				264.1	297.8	269.9	269.1	4.2
1990				216.2	253.7	247.5	196.0	4.0
1991				190.8	232.0	230.3	196.8	4.3
1992				606.5	758.9	758.3	717.3	2.8
1993				558.7	715.3	714.4	686.9	2.7
1994				6.8	8.9	8.9	6.4	2.0
1995				340.2	452.7	451.4	440.1	1.9
1996				540.0	733.7	227.1	42.3	2.0
1997				415.4	576.8			2.2
1998				368.2	522.7			2.2
1999				178.4	259.0			2.3
2000				69.0	102.4			2.2
2001				46.0	69.7			2.2
2002				51.0	79.0			2.2
2003				49.9	79.0			2.2

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2004				24.7	40.0			2.2
Subtot				5520.6	6826.0	4552.2	4193.0	

NOTE: FY 1983 \$'s reflect \$29.9M of Army funds (PE 0604222A).

Appropriation: 1506 Aircraft Procurement, Navy

1989		196.7		196.7	231.4	231.4	189.2	4.2
1990								4.0
1991								4.3
1992								2.8
1993								2.7
1994								2.0
1995								1.9
1996				33.6	46.6			2.0
1997	4	10.6	316.9	424.3	602.3			2.2
1998	5	3.6	329.2	395.4	573.8			2.2
1999	7	4.0	401.7	489.8	726.5			2.3
2000	9	7.4	441.5	554.9	841.2			2.2
2001	10	36.1	442.0	603.8	935.5			2.2

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V-22 (OSPREY), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated Ex-pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2002	14	52.2	549.0	888.6	1407.0		2.2
2003	14	11.6	507.1	730.4	1182.0		2.2
2004	18	12.1	606.9	875.7	1448.2		2.2
2005	20	12.2	636.2	763.4	1290.3		2.2
2006	21	12.2	637.1	777.0	1342.2		2.2
2007	21	12.1	613.2	809.7	1429.5		2.2
2008	21	3.0	597.1	782.4	1411.6		2.2
2009	22	3.1	618.3	751.5	1385.7		2.2
2010	21	3.0	586.0	821.7	1548.4		2.2
2011	22	3.1	603.3	770.9	1484.7		2.2
2012	22	3.0	597.4	834.6	1642.8		2.2
2013	22	3.0	591.6	942.1	1895.1		2.2
2014	24	3.2	632.5	817.3	1680.3		2.2
2015	24	3.2	625.1	753.4	1583.0		2.2
2016	23	3.1	599.4	740.8	1590.7		2.2
2017	24	3.1	617.4	767.4	1684.0		2.2
2018	24	3.1	611.4	808.0	1812.1		2.2
2019	25	3.2	630.9	820.9	1881.6		2.2

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2020	28	3.5	694.7	851.6	1994.9			2.2
2021	28	3.4	675.9	757.6	1813.8			2.2
Subtot	473	414.8	14161.8	18763.5	35465.2	231.4	189.2	

Appropriation: 1205 Military Construction, Navy

1990				4.0	4.8	4.6	4.6	4.0
1991								4.3
1992								2.8
1993								2.7
1994								2.0
1995								1.9
1996								2.0
1997								2.2
1998								2.2
1999								2.3
2000								2.2
2001								2.2
2002								2.2

V-22 (OSPREY), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2003							2.2
2004							2.2
2005							2.2
2006							2.2
2007				5.3	9.4		2.2
2008							2.2
2009							2.2
2010				1.5	2.8		2.2
2011				1.6	3.1		2.2
2012				2.6	5.1		2.2
2013				2.0	4.0		2.2
2014							2.2
2015				2.1	4.4		2.2
Subtot				19.1	33.6	4.6	4.6
Navy	473	414.8	14161.8	24303.2	42324.8	4788.2	4386.8

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1985				0.6	0.6	0.6	0.6	3.4
1986				2.2	2.2	2.2	2.2	2.8
1987				2.8	2.9	2.9	2.9	2.7
1988				23.1	25.0	25.0	25.0	3.0
1989				3.4	3.8	3.8	3.1	4.2
Subtot				32.1	34.5	34.5	33.8	

Appropriation: 3010 Aircraft Procurement, Air Force

2000				22.6	34.2			2.2
2001	4		203.1	280.0	433.8			2.2
2002	6	24.2	264.2	364.0	576.4			2.2
2003	7	4.8	282.8	464.6	751.8			2.2
2004	7	4.8	262.6	333.2	551.0			2.2
2005	7	4.9	247.1	290.9	491.7			2.2
2006	7	4.9	235.4	325.7	562.7			2.2
2007	7	4.9	226.6	271.2	478.8			2.2
2008	5		157.8	174.3	314.5			2.2
Subtot	50	48.5	1879.6	2526.5	4194.9			

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V-22 (OSPREY), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3300 Military Construction, Air Force

2001				1.4	2.2			2.2
2002								2.2
2003								2.2
2004				1.4	2.3			2.2
2005								2.2
2006				0.9	1.6			2.2
2007								2.2
2008				1.6	2.9			2.2
Subtot				5.3	9.0			
USAF	50	48.5	1879.6	2563.9	4238.4	34.5	33.8	

Appropriation: 0400 RDT&E, Defense Agencies

1991				6.3	7.7	7.7	6.5	4.3
1992				11.3	14.1	14.1	3.8	2.8
1993								2.7
1994				11.3	14.7	14.7	4.5	2.0
Subtot				28.9	36.5	36.5	14.8	
DoD				28.9	36.5	36.5	14.8	

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

Grand Total	523	463.3	16041.4	26896.0	46599.7	4859.2	4435.4	
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17. Production Rate Data:

a. Deliveries to Date --

	RDT&E	Plan/Actual
Procurement		6/6 0/0

Of the 6 aircraft ordered and delivered under the FSD airframe contract, only 2 aircraft remain. Of those 2 aircraft, 1 is in permanent storage and 1 is still being flown as part of the test program at Patuxent River, MD.

This program is pre-Milestone III and no full-rate production baseline has been determined.

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

An Operating and Support Cost estimate for the V-22 is currently being developed for reporting to the Cost Analysis Improvement Group (CAIG) in November 1996 and will be reported in the next SAR.

b. Costs -- None.

c. Contractor Support Costs -- None.

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

PROGRAM: Chem Demil

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Chemical Demilitarization Program

2. DoD Component: Army

3. Responsible Office and Telephone Number:

SFAE-CD-Z

MG Robert D. Orton

APG, MD 21010-5401

Assigned: June 12, 1995

AV 584-3447 COMM 410-671-3447

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0708007D

PROCUREMENT:

APPN ICN TBD

MILCON:

PE 0708007A, 0708007D

O & M:

PE 0708007D

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5. Related Programs:

None.

6. Mission and Description:

The Chemical Demilitarization (Chem Demil) Program consists of the Chemical Stockpile Disposal Project (CSDP), the Non-Stockpile

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6. Mission and Description (Cont'd):

Chemical Materiel Project (NSCMP), the Chemical Stockpile Emergency Preparedness Project (CSEPP), and the Alternative Technologies and Approaches Project (ATAP). The primary mission to be accomplished under the CSDP is the demilitarization of the United States unitary stockpile of lethal chemical agents and munitions stored at eight locations in the continental United States, and Johnston Atoll (JA) in the Pacific. The current or baseline program plan uses a reverse-assembly process to separate the components of the chemical weapons followed by the incineration of each component. Efforts to be accomplished under the NSCMP are the identification of locations, types, and quantities of non-stockpile chemical materiel (NSCM); development and implementation of transportation and destruction methods and procedures; and development of schedules, plans, and cost estimates to implement the project. NSCM includes suspected buried chemical materiel; recovered chemical materiel; former chemical weapons production facilities; binary chemical weapons; and miscellaneous chemical warfare materiel (CWM). The CSEPP is an effort complementary to the CSDP to enhance protection of the civilian population, the workers involved in the destruction effort, and the environment during storage activities, and destruction of the United States' chemical weapons stockpile. The Army has the lead in the CSEPP to provide emergency response/preparedness to the communities surrounding the eight continental United States storage sites. The Federal Emergency Management Agency (FEMA) participates in this project by providing technical emergency preparedness assistance, as well as a financial structure for transferring funds to the states and counties. A separate Product Manager for Alternative Technologies and Approaches was established during 1995 with responsibility for identifying alternative technologies project requirements and alternative approaches, planning for the implementation of the requirements, and managing the activities of the various organizations involved.

7. Program Highlights:

a. Significant Historical Developments --

The concept plan for the Chemical Stockpile Disposal Project (CSDP) was submitted to Congress in 1986. In 1988, the Final Programmatic Environmental Impact Statement for the program was completed. Also, the Record of Decision (ROD) and the CSDP Implementation Plan were finalized and submitted to Congress. The Army selected on-site disposal, using reverse assembly/incineration (baseline process) to destroy the chemical weapons stockpile. The National Research Council (NRC), under the auspices of the National Academy of Sciences, was selected as an independent group to provide oversight to the Chemical Demilitarization (Chem Demil) Program.

In 1988, construction activities at the Johnston Atoll Chemical

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7a. Program Highlights (Cont'd):

Agent Disposal System (JACADS) were completed and systemization started. In 1989, construction of the first continental United States disposal facility at Tooele Army Depot, Utah was initiated. The destruction of the entire stockpile of BZ (nerve agent) at Pine Bluff Arsenal, Arkansas was completed in 1989.

In 1990, the successful retrograde of all chemical munitions stored in Germany to the storage facilities at Johnston Atoll (JA) was accomplished. Congress directed that the Army conduct and successfully complete Operational Verification Testing (OVT) at JACADS prior to initiating testing at the follow-on-sites in the continental U.S. A four-phase OVT campaign was conducted from Jul 90 until Mar 93. In Aug 93, the Secretary of Defense provided certification to Congress that the Army had successfully completed OVT at JACADS, and systemization at the recently completed Tooele facility commenced in Sep 93.

In 1992, Congress directed that the Army use an alternative technology to destroy the chemical stockpile at the low volume sites if the Secretary of the Army's evaluation (based upon the NRC's recommendation) is that the alternative technology is significantly safer, equally or more cost effective, and could destroy the stockpile at these sites by 31 Dec 04. The sites which are being considered for use of this technology are Aberdeen Proving Ground, Maryland and Newport Army Ammunition Plant, Indiana.

In Nov 93, an Interim Survey and Analysis Report, which projected the scope and a rough-order-of-magnitude cost estimate for the Non-Stockpile Chemical Material Project (NSCMP) was published and provided to Congress.

Full-scale disposal operations, commenced at JACADS in Jan 94. The first campaign was GB (nerve agent) filled M55 rockets.

The NRC Committee on Review and Evaluation of the Army Chemical Stockpile Disposal Project (the Stockpile Committee) provided its report, "Recommendations for the Disposal of Chemical Agents and Munitions" to the Army in Feb 94. Based upon the Army's evaluation of the NRC report, a Research & Development (R&D) program on two low-temperature/low pressure alternative technologies (stand-alone neutralization and neutralization followed by biodegradation) was initiated in Aug 94.

b. Significant Developments Since Last Report --

The Defense Acquisition Board (DAB) conducted a review of the program in Mar 95 to assess the status of the Chemical Stockpile Disposal Project (CSDP) and the Non-Stockpile Chemical Materiel

Chem Demil, December 31, 1995

7b. Program Highlights (Cont'd):

Project (NSCMP) and to make specific recommendations regarding program management. The Board recommended the approval of the Acquisition Program Baseline (APB). As a result, the Defense Acquisition Executive approved the APB.

Several events have occurred that affected the CSDP schedule. Longer than anticipated review periods for the Tooele Chemical Agent Disposal Facility (TOCDF) environmental permit modifications, Facility Construction Certifications, and completion of a Health Risk Assessment by the Utah Department of Environmental Quality have delayed the projected start of toxic operations from 4Q FY 95 until 3Q FY 96. In addition, the Anniston Chemical Agent Disposal Facility (ANCDF) systems contract award date was delayed from 4Q FY 95 until 2Q FY 96 with a "limited notice to proceed" provision. This allows construction planning, permit processing, and preparation for construction to begin. The Alabama Department of Environmental Management is not expected to make its decision on issuing environmental permits until 4Q FY 96 allowing construction to commence.

During 1995, public outreach efforts focused on a proactive public affairs approach. The goal of this effort is to identify concerns and issues; devise methods for effectively establishing and maintaining dialogues; seek public input; and explain information in a matter that is easily understood. A Public Outreach Office was opened in Jun 95 in Tooele, Utah and a second opened in Dec 95 in Anniston, Alabama.

In Dec 95, the Secretary of Defense provided certification to Congress that Johnston Atoll Chemical Agent Disposal System (JACADS) had satisfied the requirements of Section 2106 of Public Law 103-160, effective 20 Feb 95. JACADS demonstrated six months of successful operations while meeting all environmental and safety standards. The facility demonstrated that the process is operationally effective and the Secretary certified that the Army has scheduled award of another non-low volume site systems contract.

JACADS surpassed the "one-million pounds of lethal chemical agent destroyed" mark and completed the destruction of all M55 rockets in its stockpile during 1995. Final daily processing rates exceeded the established goals. The GB (nerve-agent) filled 750 pound bomb campaign was completed on 26 Nov 95 approximately 4 months ahead of schedule.

Systemization testing is nearly complete at TOCDF. The operation shake-down period is scheduled to begin 3Q FY 96. The execution of the required environmental documentation and trial burns continues.

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7b. Program Highlights (Cont'd):

Two of the required regulatory surrogate trial burns were completed this year in the Liquid Incinerator and Deactivation Furnace System (DFS). Also, the Toxic Substance Control Act (TSCA) R&D test burn in the DFS was completed during this time period.

The NSCMP published an Implementation Plan in Aug 95, which addresses the details of the planned disposal methods and the proposed schedules necessary for compliance with the Chemical Weapons Convention. The Small Burials Contract for the NSCMP was awarded in Jun 95.

The Army and the Federal Emergency Management Agency (FEMA) formed an integrated Chemical Stockpile Emergency Preparedness Project (CSEPP) Core Team to manage project integration and execution. The Team developed a revised Life Cycle Cost Estimate and the project was baselined during 1995.

The Product Manager for Alternative Technologies and Approaches Project (ATAP) identified two neutralization-based processes, stand alone neutralization and neutralization followed by biodegradation. These processes are currently in laboratory and bench-scale testing and evaluation for use with HD (mustard agent) and VX (nerve agent). Three additional promising alternative technologies have been identified from industry's response to a recently published Commerce Business Daily announcement. These technologies, electrochemical oxidation, high temperature gas phase reduction, and the catalytic extraction process, as well as the two neutralization-based processes, will be evaluated by the National Research Council (NRC).

The Chem Demil Program is expected to satisfy mission requirements.

c. Changes Since As Of Date --

JACADS completed the GB (nerve agent) filled 500 pound bomb campaign on 7 Feb 96. Over two million pounds of chemical agent have been destroyed at JACADS. This represents over 50% of the agent stored on Johnston Atoll. Changeover efforts are underway for the GB 155mm projectile campaign. Processing of these projectiles is scheduled to commence in 3Q FY 96.

The systems contract for ANCDF was awarded on 29 Feb 96 to Westinghouse Electric Company of Pittsburgh, PA with a "limited notice to proceed" provision.

An Overarching Integrated Product Team (OIPT) meeting was held on 26 Feb 96 to review the program's cost position (excluding NSCMP). The Defense Acquisition Board (DAB) Readiness Meeting was held on 4 Mar 96 and resulted in the cancellation of the DAB scheduled for 11 Mar

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7c. Program Highlights (Cont'd):

96. The Cost Analysis Improvement Group (CAIG) concurred with the Army cost position (current estimate) for the CSDP of \$12.4B (including CSEPP and ATAP) which was validated by independent estimates and was deemed reasonable but unaffordable based on current DoD funding levels. The results of the DAB Readiness Meeting included directing the Army to submit initial cost reduction initiatives in Jun 96 followed by an update report to the OIPT in Aug 96. These issues will be addressed during the FY98-FY03 budget reviews. The Army's report of the NRC's study of alternative technologies will be presented to the OIPT in Oct 96. It was also agreed to continue Selected Acquisition Report (SAR) reporting against the approved APB in accordance with Department of Defense (DoD) SAR policy. The Program Manager (PM) will prepare a revised schedule which will be used for reporting against schedule and performance pending completion of the Department's program and budget deliberations and approval of the revised APB at the next DAB currently planned for Mar 97. The Army, with input from the Deputy Under Secretary of Defense (Environmental Security), shall develop a critical path for an environmental permit schedule and assess environmental resource requirements.

8. Threshold Breaches:

There are schedule breaches to the approved Acquisition Program Baseline (APB) dated 29 Mar 95. Program Deviation Reports and a revised APB have been submitted. There are no Nunn-McCurdy Unit Cost breaches.

CSDP - Delays in receiving approved environmental permits from the States of Utah and Alabama have slipped the start of operations (agent shakedown) at the Tooele disposal facility, construction start at the Anniston disposal facility, and award of the systems contract at the Pine Bluff disposal facility. The estimated length of the systemization phase at the seven remaining chemical facilities has increased by four months and the estimated projectile processing rate has decreased by 25%. These changes will cause schedule breaches at Tooele, Anniston, Umatilla and Pueblo. The Pine Bluff breaches are the result of the cumulative effects of the systems contract award delay and the extension to systemization.

CSEPP - The CSDP schedule extension for systemization will cause breaches of the Pre-Operational/Annual Exercise milestones for ANCDF, PUCDF, and Newport Chemical Agent Disposal Facility (NECDF). We anticipate no unfavorable cost, schedule or performance impact to the program due to these breaches since exercises occur annually and only the exercise prior to the start of operations is designated as the milestone event.

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8. Threshold Breaches (Cont'd):

NSCMP - Although the Rapid Response System Prototype permit application was submitted on time, we do not expect to receive approval within schedule thresholds which will delay the start of Concept Demonstration. The current PM's estimate is Oct 96.

9. Schedule:

CSDP

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE DISPOSAL PROGRAM (CSDP)			
CAMDS Testing	SEP 79	SEP 79	SEP 79
DAB Program Review	MAR 95	MAR 95	MAR 95
JOHNSTON ATOLL (JACADS)			
JACADS Construction	SEP 85	SEP 85	SEP 85
Begin Operations	JUL 90	JUL 90	JUL 90
Begin Closure	MAR 00	MAR 00	NOV 99 (Ch-1)
TOOELE (TOCDF)			
Submit RCRA/CAA Permit Applications	OCT 88	OCT 88	OCT 88
Systems Contract Award/Start Const.	OCT 89	OCT 89	OCT 89
Begin Systemization	SEP 93	SEP 93	SEP 93
Begin Operations	SEP 95	SEP 95	MAY 96 (Ch-2)
Begin Closure	JAN 02	JAN 02	JUL 03 (Ch-3)
ANNISTON (ANCDF)			
Submit Updated RCRA/CAA Permit Applications	FEB 95	FEB 95	FEB 95
Systems Contract Award/Start Const.	ADG 95	AUG 95	FEB 96 (Ch-2)
Begin Systemization	JUN 98	JUN 98	MAY 99 (Ch-3)
Begin Operations	DEC 99	DEC 99	MAR 01 (Ch-3)
Begin Closure	AUG 03	AUG 03	JAN 05 (Ch-3)
UMATILLA (UMCDF)			
Submit Updated RCRA/CAA Permit Applications	MAR 95	MAR 95	SEP 95 (Ch-2)
Systems Contract Award/Start Const.	MAR 96	MAR 96	SEP 96 (Ch-2)
Begin Systemization	JAN 99	JAN 99	JUL 99 (Ch-3)
Begin Operations	JUL 00	JUL 00	MAY 01 (Ch-3)
Begin Closure	SEP 03	SEP 03	SEP 04 (Ch-3)

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9a. Schedule (Cont'd):
CSDP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
PINE BLUFF (PBCDF)			
Submit RCRA/CAA Permit Applications	JUN 95	JUN 95	JUN 95
Systems Contract Award/Start Const.	JUN 96	JUN 96	SEP 96 (Ch-4)
Begin Systemization	FEB 99	FEB 99	MAY 99 (Ch-4)
Begin Operations	AUG 00	AUG 00	MAR 01 (Ch-4)
Begin Closure	NOV 03	NOV 03	JUL 04 (Ch-4)
PUEBLO (PUCDF)			
Submit Updated RCRA/CAA Permit Applications	SEP 95	SEP 95	OCT 95 (Ch-2)
Systems Contract Award/Start Const.	APR 97	APR 97	APR 97
Begin Systemization	FEB 00	FEB 00	FEB 00
Begin Operations	AUG 01	AUG 01	DEC 01 (Ch-3)
Begin Closure	AUG 03	AUG 03	MAY 04 (Ch-3)
LEXINGTON BLUE GRASS (BGCDF)			
Submit RCRA/CAA Permit Applications	SEP 95	SEP 95	DEC 95 (Ch-5)
Systems Contract Award/Start Const.	JAN 98	JAN 98	JAN 98
Begin Systemization	NOV 00	NOV 00	NOV 00
Begin Operations	MAY 02	MAY 02	SEP 02 (Ch-3)
Begin Closure	MAR 04	MAR 04	JUL 04 (Ch-3)
ABERDEEN (ABCDF)			
Submit RCRA/CAA Permit Applications	JUL 96	JUL 96	NOV 96 (Ch-6)
Systems Contract Award/Start Const.	JAN 99	JAN 99	JAN 99
Begin Systemization	JUN 01	JUN 01	JUN 01
Begin Operations	JUN 02	JUN 02	OCT 02 (Ch-3)
Begin Closure	MAY 03	MAY 03	JUL 03 (Ch-3)
NEWPORT (NECDF)			
Submit RCRA/CAA Permit Applications	JUL 97	JUL 97	JUL 97
Systems Contract Award/Start Const.	JAN 00	JAN 00	JAN 00
Begin Systemization	JUN 02	JUN 02	JUN 02
Begin Operations	JUN 03	JUN 03	OCT 03 (Ch-3)
Begin Closure	APR 04	APR 04	JUN 04 (Ch-3)

ACRONYMS - in order of appearance:

RCRA - Resource Conservation and Recovery Act
 CAA - Clean Air Act
 CAMDS - Chemical Agent and Munition Disposal System

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9a. Schedule (Cont'd):

CSDP

- JACADS - Johnston Atoll Chemical Agent Disposal System
- T&E - Test and Evaluation
- TOCDF - Tooele Chemical Agent Disposal Facility
- ANCDF - Anniston Chemical Agent Disposal Facility
- UMCDF - Umatilla Chemical Agent Disposal Facility
- PBCDF - Pine Bluff Chemical Agent Disposal Facility
- FUCDF - Pueblo Chemical Agent Disposal Facility
- BGCDP - Blue Grass Chemical Agent Disposal Facility
- ABCDF - Aberdeen Chemical Agent Disposal Facility
- NECDF - Newport Chemical Agent Disposal Facility

Note 1: Principal Pre-Operational Readiness Process Activities include:

- CSEPP
- Safety/Surety/Occupational Health Training
- Systemization Oversight Review
- Acceptance T&E Report Review
- Review of Final Environmental Approvals
- Plant Operations Preparation

Note 2: Facilities constructed to carry out chemical demilitarization may not be used for any purpose other than the destruction of lethal chemical agents and munitions, and when no longer needed to carry out this mission, such facilities shall be cleaned, dismantled, and disposed of in accordance with applicable laws and regulations.

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) - The PM's current estimate for the JACADS "Begin Closure" milestone is currently ahead of the APB schedule date (the PM's Current Estimate has changed from Mar 00 to Nov 99). Contributing factors to a possible early closure are successful processing rates which have exceeded established goals and the completion of the 750 pound bomb campaign approximately 4 months ahead of schedule.

(Ch-2) - The following milestones have changed due to delays in receiving approval of environmental permits from their respective states:

MILESTONES	1994 SAR EST.	1995 SAR CURRENT EST.
TOOELE (TOCDF) Begin Operations	Sep 95	May 96

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9c. Schedule (Cont'd):

CSDP

ANNISTON (ANCDF)		
Systems Contract	Aug 95	Feb 96
Award/Start Const.		

UMATILLA (UMCDF)		
Submit Updated RCRA/ CAA Permit Applications	Mar 95	Sep 95
Systems Contract Award/ Start Const.	Mar 96	Sep 96

(Ch-3) - The following milestones have changed due to the aforementioned delays (Ch-2) which have caused a ripple effect in meeting follow-on milestones for these following sites. The schedules have also been impacted by a 4 month extension to the systemization phase and the reduction of the planning estimates of the projectile processing rate by an additional 25% from the current baseline.

MILESTONES	1994 SAR EST.	1995 SAR CURRENT EST.
TOOELE (TOCDF)		
Begin Closure	Jan 02	Jul 03
ANNISTON (ANCDF)		
Begin Systemization	Jun 98	May 99
Begin Operations	Dec 99	Mar 01
Begin Closure	Aug 03	Jan 05
UMATILLA (UMCDF)		
Begin Systemization	Jan 99	Jul 99
Begin Operations	Jul 00	May 01
Begin Closure	Sep 03	Sep 04
PUEBLO (PUCDF)		
Begin Operations	Aug 01	Dec 01
Begin Closure	Aug 03	May 04
LEXINGTON BLUE GRASS (BGCDF)		
Begin Operations	May 02	Sep 02
Begin Closure	Mar 04	Jul 04
ABERDEEN (ABCDF)		
Begin Operations	Jun 02	Oct 02
Begin Closure	May 03	Jul 03

Chem Demil, December 31, 1995

9c. Schedule (Cont'd):

CSDP

NEWPORT (NECDF)

Begin Operations	Jun 03	Oct 03
Begin Closure	Apr 04	Jun 04

(Ch-4) - The following milestones have changed due to delays in receiving approved environmental permits (see revised systemization schedule).

(Ch-5) - The planned submission of the BGCDF RCRA/CAA Permit Application has slipped from Sep 95 to Dec 95.

(Ch-6) - The planned submission of the ABCDF RCRA/CAA Permit Application has slipped from Jul 96 to Nov 96. The PM plans to delay submitting permit applications until the DAB review for Alternative Technologies Approaches Project has occurred.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAB Approved Acquisition Program Baseline dated March 29, 1995.

Alternative Technology

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM			
Milestone 0	AUG 94	AUG 94	AUG 94
Milestone I/II (Pilot Scale)	JUL 96	JUL 96	OCT 96 (Ch-1)

Note 1: Alternative Technologies and Approaches is defining neutralization processes. A technology decision will occur at the MS I/II decision (Oct 96) for which the parameters will be established.

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) - Milestones I/II (Pilot Scale) changed from Jul 96 to Oct 96 to allow adequate time for assessment of three commercially developed technologies.

Chem Demil, December 31, 1995

9d. Schedule (Cont'd):
Alternative Technology

d. References --

Planning Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

CSEPP

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
CHEMICAL STOCKPILE EMERGENCY PREPAREDNESS PROGRAM (CSEPP)			
TOOELE (TOCDF)			
ADP	JAN 94	JAN 94	JAN 94
Communications	MAR 94	MAR 94	MAR 94
A&N	JUN 94	JUN 94	JUN 94
Pre-Op/Annual Exercise	AUG 95	AUG 95	AUG 95
ANNISTON (ANCDF)			
A&N	SEP 93	SEP 93	SEP 93
ADP	JUN 94	JUN 94	JUN 94
Communications	OCT 94	OCT 94	OCT 94
Pre-Op/Annual Exercise	MAR 99	MAR 99	MAR 00 (Ch-1)
UMATILLA (UMCDF)			
ADP	JUN 94	JUN 94	JUN 94
Communications	MAY 95	MAY 95	MAY 95
A&N	DEC 95	DEC 95	DEC 95
Pre-Op/Annual Exercise	MAY 00	MAY 00	MAY 00
PINE BLUFF (FBCDF)			
ADP	FEB 92	FEB 92	FEB 92
A&N	MAY 94	MAY 94	MAY 94
Communications	MAY 94	MAY 94	MAY 94
Pre-OP/Annual Exercise	FEB 00	FEB 00	FEB 00
POKBLO (PUCDF)			
ADP	OCT 92	OCT 92	OCT 92
Communications	JUN 94	JUN 94	JUN 94
A&N	DEC 95	DEC 95	DEC 95

Chem Demil, December 31, 1995

9c. Schedule (Cont'd):

CSDP

NEWPORT (NECDF)

Begin Operations	Jun 03	Oct 03
Begin Closure	Apr 04	Jun 04

(Ch-4) - The following milestones have changed due to delays in receiving approved environmental permits (see revised systemization schedule).

(Ch-5) - The planned submission of the BGCDF RCRA/CAA Permit Application has slipped from Sep 95 to Dec 95.

(Ch-6) - The planned submission of the ABCDF RCRA/CAA Permit Application has slipped from Jul 96 to Nov 96. The PM plans to delay submitting permit applications until the DAB review for Alternative Technologies Approaches Project has occurred.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

Alternative Technology

a. Milestones --

	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM			
Milestone 0	AUG 94	AUG 94	AUG 94
Milestone I/II (Pilot Scale)	JUL 96	JUL 96	OCT 96 (Ch-1)

Note 1: Alternative Technologies and Approaches is defining neutralization processes. A technology decision will occur at the MS I/II decision (Oct 96) for which the parameters will be established.

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) - Milestones I/II (Pilot Scale) changed from Jul 96 to Oct 96 to allow adequate time for assessment of three commercially developed technologies.

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9a. Schedule (Cont'd):
CSEPP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Pre-Op/Annual Exercise	AUG 00	AUG 00	AUG 01 (Ch-1)
LEXINGTON BLUE GRASS (BGCDF)			
ADP	JUL 93	JUL 93	JUL 93
A&N	OCT 94	OCT 94	OCT 94
Communications	OCT 94	OCT 94	OCT 94
Pre-Op/Annual Exercise	OCT 01	OCT 01	OCT 01
ABERDEEN (ABCDF)			
Communications	APR 95	APR 95	APR 95
ADP	APR 95	APR 95	APR 95
A&N	MAY 95	MAY 95	MAY 95
Pre-Op/Annual Exercise	APR 02	APR 02	APR 02
NEWPORT (NECDF)			
ADP	AUG 92	AUG 92	AUG 92
Communications	MAY 94	MAY 94	MAY 94
A&N	SEP 94	SEP 94	SEP 94
Pre-Op/Annual Exercise	JUN 02	JUN 02	JUN 03 (Ch-1)

ACRONYMS: in order of schedule appearance:

- A&N - Alert and Notification
- ADP - Automatic Data Processing
- TOCDF - Tooele Chemical Agent Disposal Facility
- ANCDF - Anniston Chemical Agent Disposal Facility
- UMCDF - Umatilla Chemical Agent Disposal Facility
- PBCDF - Pine Bluff Chemical Agent Disposal Facility
- PUCDF - Pueblo Chemical Agent Disposal Facility
- BGCDF - Blue Grass Chemical Agent Disposal Facility
- ABCDF - Aberdeen Chemical Agent Disposal Facility
- NECDF - Newport Chemical Agent Disposal Facility

Note 1: Each site will be exercised on an annual basis in the month agreed upon by the Army and State. Plans and training were completed at each site by Dec 92.

Note 2: The Pre-Operational Annual Exercise ("Pre-Op/Annual Exercise") is defined as the last annual exercise prior to initiating chemical demilitarization operations. Medical preparedness will occur and be evaluated prior to the pre-operational annual exercise.

Chem Demil, December 31, 1995

9b. Schedule (Cont'd):
CSEPP

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) The following milestones have changed due to extensions in the systemization phase. As a result, the Pre-Operational Annual Exercises at Anniston, Pueblo, and Newport have been delayed one year. These are technically breaches since there are no cost, schedule or performance impacts to the program. Exercises occur annually and only the exercise in the year prior to start of operations is designated as the milestone event.

MILESTONES	1994 SAR EST.	1995 SAR CURRENT EST.
ANNISTON (ANCDF) Pre-Op/Annual Exercise	Mar 99	Mar 00
PUEBLO (PUCDF) Pre-Op/Annual Exercise	Aug 00	Aug 01
NEWPORT (NECDF) Pre-Op/Annual Exercise	Jun 02	Jun 03

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

NSCMP

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
NON-STOCKPILE CHEMICAL MATERIEL PROGRAM (NSCMP)			
Begin the Programmatic Environmental Impact Statement (PEIS)	OCT 94	OCT 94	OCT 94
Obtain the PEIS Record of Decision	NOV 97	NOV 97	NOV 97
WASTE CHARACTERIZATION			

Chem Demil, December 31, 1995

9a. Schedule (Cont'd):

NSCMP

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Waste Characterization Complete	AUG 95	AUG 95	AUG 95
HQDA Safety Approval of Waste Characterization for Agents	AUG 95	AUG 95	JAN 96 (Ch-1)
MUNITIONS MANAGEMENT DEVICE PROTOTYPE (w/o Energetics)			
Submit Permit Application	SEP 95	SEP 95	NOV 95 (Ch-2)
Obtain Environmental Permit	MAY 96	MAY 96	OCT 96 (Ch-2)
Complete Concept Demonstration	JUN 97	JUN 97	JUN 97
MUNITIONS MANAGEMENT DEVICE PROTOTYPE (w/ Energetics)			
Submit Permit Application	APR 97	APR 97	APR 97
Obtain Environmental Permit	FEB 98	FEB 98	FEB 98
Complete Concept Demonstration	AUG 98	AUG 98	AUG 98
RAPID RESPONSE SYSTEM PROTOTYPE			
Submit Permit Application	AUG 95	AUG 95	JUL 95 (Ch-3)
Obtain Environmental Permit	JAN 96	JAN 96	OCT 96 (Ch-2)
Complete Concept Demonstration	APR 96	APR 96	FEB 97 (Ch-2)

Note 1: Performance - The Non-Stockpile Chemical Materiel Project (NSCMP) demonstration of chemical destruction concepts (Munitions Management Devices and Rapid Response System) will identify specific technical performance parameters for each.

Note 2: Schedule - Parameters will be defined once the Chemical Weapons Convention (CWC) has been ratified by the U.S. and enters into force (EIF). The chemical destruction systems are required to comply with the CWC after EIF and to address risk to public health and the environment due to chemical warfare materiel recovered at formerly used defense sites and active installations.

Note 3: Cost - Parameters are estimates that include prior year plus the FY96-05 planning cycle. Costs include CWC mandates but not chemical materiel buried before 01 Jan 77. Such buried materiel is not required to be destroyed under the CWC until recovered. The recovery and destruction of such buried items may be accomplished under the Defense Environmental Restoration Program. These costs will be defined as the ORD/BCE/ICE are developed, then updated in the APB.

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9b. Schedule (Cont'd):
NSCMP

b. Previous Change Explanations -- None

c. Current Change Explanations --

(Ch-1) - The receipt of the HQDA Safety Approval of the Waste Characterization was delayed from Aug 95 to Jan 96 because required neutralization chemistry was not complete. Sufficient data was available in Nov 95 to submit the request in Dec 95, and to receive the HQDA approval in Jan 96.

(Ch-2) - The following milestones have changed because of anticipated delays in receiving permits from the State of Utah.

MILESTONES	1994 SAR EST.	1995 SAR CURRENT EST.
MUNITIONS MANAGEMENT		
DEVICE PROTOTYPE (w/o Energetics)		
Submit Permit Application	Sep 95	Nov 95
Obtain Environmental Permit	May 96	Oct 96
RAPID RESPONSE SYSTEM PROTOTYPE		
Obtain Environmental Permit	Jan 96	Oct 96
Complete Concept Demonstration	Apr 96	Feb 97

(Ch-3) - The permit application for the Rapid Response System Prototype was submitted in Jul 95 earlier than the original estimate of Aug 95.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

Chem Demil, December 31, 1995

10. Performance Characteristics:
CSDP

a. Performance --	DE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
CHEMICAL STOCKPILE DISPOSAL PROGRAM (CSDP)					
Environmental Performance	Exceed State & Federal Rqmts.	Exceed State & Federal Rqmts.	/ Meet State & Federal Rqmts.	TBD	Meets State & Federal Rqmts.
Safety and Occupational Laws and Regulations	Exceed State & Federal Stds.	Exceed State & Federal Stds.	/ Meet State & Federal Stds.	TBD	Meets State & Federal Stds.
Chemical Agent Release	0	0	/ 0	TBD	0
Chemical Agent Exposure	0	0	/ 0	TBD	0
LIC POHC Removal Efficiency	100%	100%	/ 99.9999%	TBD	99.9999%
Other Furnaces POHC of Agent Removal efficiency	100%	100%	/ 99.99%	TBD	99.99%
DFS PCB Removal Efficiency	100%	100%	/ 99.9999%	TBD	99.9999%
PROCESSING RATES (Per/Hour)					
M55 Rockets	24	24	/ 24	30	24
M23 Land Mines	36	36	/ 36	N/A (not demonstrated during systemization)	36
105mm Projectiles					
Mustard	104	104	/ 104	N/A	104
GB	117	117	/ 117	123	117
155mm Projectiles					
Mustard	98	98	/ 98	132	98
VX & GB	83	83	/ 83	106	83
8-inch Projectile	32	32	/ 32	N/A	32
4.2inch Mortar	114	114	/ 114	121	114
500lb Bomb	4.6	4.6	/ 4.6	N/A	4.6
750lb Bomb	4.6	4.6	/ 4.6	22	4.6
Weteye Bomb	1.7	1.7	/ 1.7	5.8	1.7

Chem Demil, December 31, 1995

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Ton Container					
Mustard & GB	0.8	0.8	/ 0.8	6.0	0.8
VX	0.5	0.5	/ 0.5	6.0	0.5
Spray Tanks	0.6	0.6	/ 0.6	7.9	0.6

Acronyms - in order of appearance:

- DFS - Deactivation Furnace System
- GB - Nerve Chemical Agent
- H/HD - Mustard Blister Chemical Agent
- LIC - Liquid Incinerator
- mm - millimeter
- PCB - Polychlorinated Biphenyl
- POHC - Principal Organic Hazardous Constituent
- VX - Nerve Chemical Agent
- lb - Pound
- mg/m³ - milligram per cubic meter

Note 1: The demonstrated rates are from the individual demilitarization machine capacity runs and do not include processing in the furnaces. Furnace capacity is demonstrated during the execution of the surrogate trial burns. For TOCDF, successful surrogate trial burns have been completed in the systems required for rocket processing (both LICs and the DFS). Mine processing requires replacement of equipment in the facility and is not conducted during systemization. Munitions listed as "N/A" are not stored at Tooele; these munitions will be demonstrated at other CONUS stockpile sites. The overall evaluation of the systemization experience is being finalized between PMCD and U.S. Army Materiel Systems Analysis Activity (AMSAA). Once that evaluation is completed, these numbers will be updated to be consistent with the evaluation results.

Note 2: "Meets environmental laws and regulations" means the facility is operating in compliance with all the conditions specified in environmental permits and applicable laws and regulations. The threshold is breached if violation warrants a stop work order.

Note 3. "Meets 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 violation warrants a stop-work order.

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10a. Performance Characteristics (Cont'd):

CSDP

Note 4: The term chemical agent release is defined as an event involving:

a. Confirmed agent release outside engineering controls and above the general population limits as measured at a perimeter monitoring station with the disposal facility as the identified source. The general population limits are:

GB - 0.000003 mg/m³

VX - 0.000003 mg/m³

H/HD - 0.0001 mg/m³

b. Confirmed point source (stack) agent release above the allowable stack concentration (ASC). The ASC values are:

GB - 0.0003 mg/m³

VX - 0.0003 mg/m³

H/HD - 0.03 mg/m³

Note 5: A chemical agent exposure refers to an individual exhibiting clinical signs or symptoms of being exposed to chemical agent.

Note 6: Incinerator Performance is defined as the demonstration of POHC and PCB destruction and removal efficiency during trial burns. Incinerator operational conditions are recorded during all incineration activities. Measurements of other incinerator emissions are generally required by permits, but these measurements are typically not limited to just during trial burns and when the incinerator is operating at maximum capacity. For example, emissions monitoring of agent is a continuous requirement regardless of throughput rate.

Note 7: Threshold values represent start-up rate demonstrated during systemization eight-hour capacity run. Objective values represent the average full-rate utilized in the calculation of schedule duration.

b. Previous Change Explanations -- None

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Chem Demil, December 31, 1995

10d. Performance Characteristics (Cont'd):
CSDP

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

Alternative Technology

a. Performance --	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
ALTERNATIVE TECHNOLOGIES PROGRAM	TBD	TBD / TBD	TBD	TBD

b. Previous Change Explanations -- None

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

CSEPP

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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CHEMICAL STOCKPILE
 EMERGENCY
 PREPAREDNESS PROGRAM
 (CSEPP)

Notification of
 Decisions
 COMMUNICATIONS
 Lines

1.5 mbs T1, for onpost, IRZ and state connect	1.5 mbs T1, for onpost, IRZ and state connect	/ 56 kbs for post, IRZ and state connect	NDI Equip: Complies to Commer- cial Stds.	1.5 mbs T1, for on-post, IRZ and state connect
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10a. Performance Characteristics (Cont'd):

CSEPP

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Hardware	Mux equip. compat. w/T1 1.5 mbs lines	Mux equip. compat. w/T1 1.5 mbs lines	/ Mux equip. compat. w/56 kbs lines	NDI Equip: Complies to Commercial Stds.	Mux equip. compat. w/T1 1.5 mbs lines
ADP Hardware	Capacity for plan, hazard assmt, A&N, and total chem emerg mgmt	Capacity for plan, hazard assmt, A&N, and total chem emerg mgmt	/ Capacity for haz assmt	NDI Equip: Complies to Commercial Stds.	Capacity for plan, hazard assmt, A&N, and total chem emerg mgmt
Software	Identic. onpost/offpost software at national level	Identic. onpost/offpost software at national level	/ Onpost/offpost connect	On-post/off-post connectivity at 8 sites	Identic. on-post/off-post software at national level
Sirens	Total IRZ cov at 10 dbC over avg ambient levels	Total IRZ cov at 10 dbC over avg ambient levels	/ Total IRZ cov at 10 dbC over avg ambient levels	Initial installation complete at 6 of 8 sites	Total IRZ cov at 10 dbC over avg ambient levels
Tone Alert Radios	One per occupied residence within IRZ	One per occupied residence within IRZ	/ One per occupied residence within IRZ	Installation commences summer 1995	One per occupied residence within IRZ.
ANNUAL EXERCISE					

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Notify Offpost	5/10	5/10	/ 5/10	5/10* Pending instal- lation of alert systems	5/10
Notify Public	8	8	/ 8	TBD	8

Acronyms -

- ADP - Automatic Data Processing
- A&N - Alert & Notification
- IRZ - Immediate Response Zone
- mbs - megabytes per second
- kbs - kilobytes per second
- Mux - Multiplex
- dbc - Decibel C - weighted network
- cov - coverage

Note 1: The CSEPP applies to the four aspects of storage, transport, demilitarization, and non-stockpile efforts pertaining to chemical munitions and facilities. Funding for emergency equipment is provided to the States. The requirements for communications, ADP, sirens and tone alert radios are the benchmarks provided to the states for equipment purchases. All required equipment is commercial off-the-shelf and each state is responsible for purchase and installation IAW state laws and regulations.

Note 2: The time (minutes) it takes on-post personnel to notify the off-post officials of an incident on post (10 minutes time at PUDA, UMDA, and TEAD are based on distance to the population density).

Note 3: The time (minutes) it takes off-post officials to alert and notify the public of an incident on post.

Note 4: Each site will be exercised on an annual basis in the month agreed upon by the Army and State. Plans and training were completed at each site by Dec 92.

Note 5: The Pre-Operational Annual Exercise ("Pre-Op/Annual Exercise") is defined as the last annual exercise prior to initiating chemical demilitarization operations. Medical Preparedness will occur and be evaluated prior to the Pre-Operational Annual exercise.

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10a. Performance Characteristics (Cont'd):

CSEPP

* Demonstrated at most sites, working on consistency.

b. Previous Change Explanations -- None

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

NSCMP

a. Performance --		Approved Program		Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>		<u>Perf</u>	<u>Estimate</u>

NON-STOCKPILE

**CHEMICAL MATERIEL
PROGRAM (NSCMP)**

Comply CWC provisions	Yes	Yes	/ Yes	TBD	Yes
Characterize Waste	N/A	TBD	/ TBD	TBD	TBD
Munition Management Device Prototype (w/o energetics)	N/A	TBD	/ TBD	TBD	TBD
Munition Management Device Prototype (with Energetics)	N/A	TBD	/ TBD	TBD	TBD
Rapid Response System Prototype	N/A	TBD	/ TBD	TBD	TBD

Note 1: Performance - The Non-Stockpile Chemical Materiel Project (NSCMP) demonstration of chemical destruction concepts (Munitions Management Devices and Rapid Response System) will identify specific technical performance parameters for each.

Note 2: Schedule - Parameters will be defined once the Chemical Weapons Convention (CWC) has been ratified by the U.S. and enters into force (EIF). The chemical destruction systems are required to comply with the CWC after EIF and to address risk to public health and the environment due to chemical warfare materiel recovered at formerly used defense sites and active installations.

Note 3: Cost - Parameters are estimates that include prior year

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10a. Performance Characteristics (Cont'd):

NSCMP

plus the FY 96-05 planning cycle. Costs include CWC mandates, but not chemical materiel buried before 01 Jan 77. Such buried materiel is not required to be destroyed under the CWC until recovered. The recovery and destruction of such buried items may be accomplished under the Defense Environmental Restoration Program. These costs will be defined as the ORD/BCE/ICE are developed, then updated in the APB.

b. Previous Change Explanations -- None

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

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

Summary

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	390.8	390.8	405.8
Procurement	2619.0	2619.0	2801.5
Total Flyaway	(2619.0)		(2801.5)
Total Other Wpn Sys	(0.0)		(0.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	1240.1	1240.1	1395.2
Ops. and Maint. (O&M)	<u>7224.6</u>	<u>7224.6</u>	<u>7568.1</u>
Total FY 94 Base-Year \$	11474.5	11474.5	12170.6
Escalation	1636.1	1636.1	1442.0
Development (RDT&E)	(48.2)	(48.2)	(39.4)
Procurement	(222.3)	(222.3)	(222.7)
Construction (MILCON)	(133.5)	(133.5)	(117.8)
Ops. and Maint. (O&M)	<u>(1232.1)</u>	<u>(1232.1)</u>	<u>(1062.1)</u>
Total Then-Year \$	13110.6	13110.6	13612.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>18</u>	<u>18</u>	<u>18</u>
Total	18	18	18

Chem Demil, December 31, 1995

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

CSDP

	Development	Approved	Current
a. Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	67.0	67.0	66.2
Procurement	2280.0	2280.0	2478.3
Chem Demil	(2280.0)		(2478.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	1240.1	1240.1	1395.2
Ops. and Maint. (O&M)	<u>5823.6</u>	<u>5823.6</u>	<u>6095.0</u>
Total FY 94 Base-Year \$	9410.7	9410.7	10034.7
 Escalation	 1293.8	 1293.8	 1160.9
Development (RDT&E)	(-6.4)	(-6.4)	(-6.0)
Procurement	(196.8)	(196.8)	(208.8)
Construction (MILCON)	(133.5)	(133.5)	(117.8)
Ops. and Maint. (O&M)	<u>(969.9)</u>	<u>(969.9)</u>	<u>(840.3)</u>
Total Then-Year \$	10704.5	10704.5	11195.6

German retrograde and Johnston Atoll leave are included in O&M funding.

Quantity - The total of 18 includes 8 CSDP CONUS demilitarization plants, 1 CSDP demilitarization plant at Johnston Atoll, 8 CSEPP programs (CONUS only) and 1 NSCMP program.

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	9	9	9
Total	9	9	9

Note: Total quantity is defined as 9 (8 CONUS plants and Johnston Atoll).

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

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

Alternative Technology

	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. Cost --			
Development (RDT&E)	189.0	189.0	202.5
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	189.0	189.0	202.5
Escalation	34.8	34.8	30.0
Development (RDT&E)	(34.8)	(34.8)	(30.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	223.8	223.8	232.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	0	N/A	0
Total	0	0	0

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

CSEPP

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. Cost --			
Development (RDT&E)	0.0	0.0	0.0
Procurement	254.9	254.9	239.6
CSEPP	(254.9)		(239.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>628.2</u>	<u>628.2</u>	<u>700.6</u>
Total FY 94 Base-Year \$	883.1	883.1	940.2

Chem Demil, December 31, 1995

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

CSEPP

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	91.6	91.6	81.4
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(14.4)	(14.4)	(5.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(77.2)</u>	<u>(77.2)</u>	<u>(76.4)</u>
Total Then-Year \$	974.7	974.7	1021.6

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>8</u>	<u>8</u>	<u>8</u>
Total	8	8	8

Note: Total quantity is defined as 8 CONUS CSEPP sites.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

NSCMP

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	134.8	134.8	137.1
Procurement	84.1	84.1	83.6
NSCMP	(84.1)		(83.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>772.8</u>	<u>772.8</u>	<u>772.5</u>
Total FY 94 Base-Year \$	991.7	991.7	993.2

Chem Demil, December 31, 1995

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

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	215.9	215.9	169.7
Development (RDT&E)	(19.8)	(19.8)	(15.4)
Procurement	(11.1)	(11.1)	(8.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(185.0)</u>	<u>(185.0)</u>	<u>(145.4)</u>
Total Then-Year \$	1207.6	1207.6	1162.9

b. Quantity --

Development (RDT&E)	0	0	0
Procurement	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Total	1	1	1

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY96 President's Budget dated February 6, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated March 29, 1995.

12. Unit Cost Summary:

CSDP

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	10034.7	9410.7	
(2) Quantity	9	9	
(3) Unit Cost	1114.97	1045.63	6.63

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12. Unit Cost Summary (Cont'd):

CSDP

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY94\$)	2478.3	2280.0	
(2) Quantity	9	9	
(3) Unit Cost	275.37	253.33	8.70

Alternative Technology

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

CSEPP

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	940.2	883.1	
(2) Quantity	8	8	
(3) Unit Cost	117.53	110.39	6.47
b. Procurement			
(1) Cost (BY94\$)	239.6	254.9	
(2) Quantity	8	8	
(3) Unit Cost	29.95	31.86	-6.00

NSCMP

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	993.2	991.7	
(2) Quantity	1	1	
(3) Unit Cost	993.20	991.70	0.15

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12. Unit Cost Summary (Cont'd):

NSCMP

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY94\$)	83.6	84.1	
(2) Quantity	1	1	
(3) Unit Cost	83.60	84.10	-0.59

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13. Cost Variance Analysis:
CSDP

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	60.6	2476.8	1373.6	6793.5	10704.5
Previous Changes:					
Economic	-	-	-	-	-
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Economic	0.3	-50.0	-45.6	-227.2	-322.5
Quantity	-	-	-	-	-
Schedule	-	37.7	-	327.2	+364.9
Engineering	-	237.5	-	-	+237.5
Estimating	-0.7	-14.9	185.0	41.8	+211.2
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.4	+210.3	+139.4	+141.8	+491.1
Total Changes	-0.4	+210.3	+139.4	+141.8	+491.1
Current Estimate	60.2	2687.1	1513.0	6935.3	11195.6

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Chem Demil, December 31, 1995

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

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

	RDT&E	PROC	MILCON	O&M	TOTAL
Development Estimate	67.0	2280.0	1240.1	5823.6	9410.7
Previous Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	-	-	-	-
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	-	-	-	-
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	3.8	-	272.4	+276.2
Engineering	-	209.8	-	-	+209.8
Estimating	-0.8	-15.3	155.1	-1.0	+138.0
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-0.8	+198.3	+155.1	+271.4	+624.0
Total Changes	-0.8	+198.3	+155.1	+271.4	+624.0
Current Estimate	66.2	2478.3	1395.2	6095.0	10034.7

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices (Economic)	N/A	+0.3
Adjustment for current & prior inflation. (Estimating)	-0.4	-0.4

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13c. Cost Variance Analysis (Cont'd):
CSDP

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to adjust prior years to actual (Estimating)	-0.4	-0.3
RDT&E Subtotal	<u>-0.8</u>	<u>-0.4</u>
(2) Procurement		
Revised escalation indices (Economic)	N/A	-50.0
Adjustment for current and prior inflation (Estimating)	+6.6	+7.1
CAMDS schedule extension for Lewisite testing; Additional design engineering costs based on revised award dates for ANCDF, UMCDF, PBCDF & PUCDF (Schedule)	+3.8	+37.7
Refinement of estimates for acquisition and installation of pollution abatement system carbon filters; increased allowance for process engineering changes during construction (Engineering)	+209.8	+237.5
Revised estimate to adjust prior years to actual (Estimating)	-21.9	-22.0
Procurement Subtotal	<u>+198.3</u>	<u>+210.3</u>
(3) MILCON		
Revised escalation indices (Economic)	N/A	-45.6
Adjustment for current and prior inflation (Estimating)	-0.9	-0.7
Addition of warehouse at Blue Grass due to change in depot warehouse availability (Estimating)	+2.4	+3.0
Addition of MILCON funded planning and design costs due to change in estimating assumptions; refinement of estimates for facilities construction (Estimating)	+153.6	+182.7
MILCON Subtotal	<u>+155.1</u>	<u>+139.4</u>
(4) O & M		
Revised escalation indices (Economic)	N/A	-227.2
Adjustment for current/prior inflation (Estimating)	+4.9	+5.7

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13c. Cost Variance Analysis (Cont'd):
CSDP

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Refinement of estimate for process modifications after construction; redefinition of facilities closure requirements (Estimating)	-129.7	-150.5
Revised estimate for state cooperative agreements for permit compliance oversight; National Combustion Strategy trial burns; meteorological monitoring (Estimating)	+123.8	+186.6
CONUS schedules extension of systemization based on TOCDF permitting experience and operations due to projectile schedule risk; positive schedule variance for JACADS bomb campaigns (Schedule)	+272.4	+327.2
O & M Subtotal	<u>+271.4</u>	<u>+141.8</u>

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

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	223.8	0.0	0.0	223.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-7.0	-	-	-7.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	15.7	-	-	+15.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.7	-	-	+8.7
Total Changes	+8.7	-	-	+8.7
Current Estimate	232.5	-	-	232.5

Chem Demil, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	189.0	0.0	0.0	189.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	13.5	-	-	+13.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.5	-	-	+13.5
Total Changes	+13.5	-	-	+13.5
Current Estimate	202.5	-	-	202.5

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices (Economic)	N/A	-7.0
Adjustment for current/prior inflation (Estimating)	+0.1	+0.1

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13c. Cost Variance Analysis (Cont'd):
Alternative Technology

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to adjust prior years to actual; refined estimate for pilot plant program (Estimating)	+13.4	+15.6
RDT&E Subtotal	<u>+13.5</u>	<u>+8.7</u>

CSEPP

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

	RDT&E	PROC	O&M	TOTAL
Development Estimate	0.0	269.3	705.4	974.7
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-1.8	-17.1	-18.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-22.9	88.7	+65.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-24.7	+71.6	+46.9
Total Changes	-	-24.7	+71.6	+46.9
Current Estimate	-	244.6	777.0	1021.6

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

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

	RDT&E	PROC	O&M	TOTAL
Development Estimate	0.0	254.9	628.2	883.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-15.3	72.4	+57.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-15.3	+72.4	+57.1
Total Changes	-	-15.3	+72.4	+57.1
Current Estimate	-	239.6	700.6	940.2

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation indices (Economic)	N/A	-3.8
Economic adjustment for negative program changes (Economic)	N/A	+2.0

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

CSEPP

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Refinement of estimate for large capital procurements (Estimating)	-15.3	-22.9
Procurement Subtotal	<u>-15.3</u>	<u>-24.7</u>
(2) <u>O & M</u>		
Revised escalation indices (Economic)	N/A	-17.1
Adjustment for current/prior inflation (Estimating)	+1.2	+1.3
Refinement of estimates for on-post and off-post emergency response centers operating and sustainment costs (Estimating)	+71.2	+87.4
O & M Subtotal	<u>+72.4</u>	<u>+71.6</u>

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

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

	RDT&E	PROC	O&M	TOTAL
Development Estimate	154.6	95.2	957.8	1207.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-4.2	-2.3	-40.4	-46.9
Quantity	-	-	-	-
Schedule	-	-1.0	0.4	-0.6
Engineering	1.2	-	-	+1.2
Estimating	0.9	0.6	0.1	+1.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-2.1	-2.7	-39.9	-44.7
Total Changes	-2.1	-2.7	-39.9	-44.7
Current Estimate	152.5	92.5	917.9	1162.9

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

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

	RDT&E	PROC	O&M	TOTAL
Development Estimate	134.8	84.1	772.8	991.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-1.1	-0.4	-1.5
Engineering	1.4	-	-	+1.4
Estimating	0.9	0.6	0.1	+1.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2.3	-0.5	-0.3	+1.5
Total Changes	+2.3	-0.5	-0.3	+1.5
Current Estimate	137.1	83.6	772.5	993.2

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices (Economic)	N/A	-4.2
Adjustment for current/prior inflation (Estimating)	+0.9	+0.9

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13c. Cost Variance Analysis (Cont'd):
NSCMP

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Munitions Management Device Version - 1 prototype design changes (Engineering)	+1.4	+1.2
RDT&E Subtotal	<u>+2.3</u>	<u>-2.1</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-2.3
Adjustment for current/prior inflation (Estimating)	+0.6	+0.6
Revised FY 97 requirement based on Rapid Response System slip (Schedule)	-1.1	-1.0
Procurement Subtotal	<u>-0.5</u>	<u>-2.7</u>
(3) <u>O & M</u>		
Revised escalation indices (Economic)	N/A	-40.4
Adjustment for current/prior inflation (Estimating)	+0.1	+0.1
Revised out year requirement based on Rapid Response System slip (Schedule)	-0.4	+0.4
O & M Subtotal	<u>-0.3</u>	<u>-39.9</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

CSDP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1189.39	-35.83	--	40.54	26.39	23.47	--	--	54.57	1243.96

Alternative Technology

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

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

CSEPP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
121.838	-2.363	--	--	--	8.225	--	--	5.862	127.700

NSCMP

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1207.60	-46.90	--	-0.60	1.20	1.60	--	--	-44.70	1162.90

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

a. Procurement --			Initial Contract Price		
<u>TOCDF Systems Contractor:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
EG&G Defense Mat Div, San Diego, CA					
DAC87-89-C-0076, CPAP			\$211.0	N/A	1
Award: July 21, 1989					
Definitized: July 21, 1989					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$550.0	N/A	1	\$539.0	\$550.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-4.7	\$-8.6	
Cumulative Variances To Date (01/31/96)			\$-8.0	\$0.0	
Net Change			\$-3.3	\$8.6	

Explanation of Change:

Note: This contract is funded with Procurement, Operation and Maintenance, and Military Construction funds.

The unfavorable Cost Variance reflects effort which is associated

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15. Contract Information (Cont'd):

with final negotiations for the Construction phase and continuing schedule extensions incurred during the Systemization phase. Increases in the unfavorable Cost Variance reflect continuing delays in obtaining environmental permit approvals to start agent shakedown operations. Delays in approval of permit modifications and approval to execute required test activities continue to drive the projected start of agent operations.

The favorable Schedule Variance reflects the current status of EG&G. The State of Utah must approve the Health Risk Assessment which is necessary to start agent operations. The project anticipates receiving approval to start operations 3Q FY 96. This is a breach of the APB date for the start of agent operations. A Program Deviation Report was prepared and forwarded to DA in Jan 96. The PMCD is working closely with the State of Utah to work the required actions to obtain final approval to begin operations at TOCDF. PMCD will continue to work to minimize overall schedule drivers.

The PM's Estimated Cost is based on current negotiated scope including the first year of agent operations.

Humphreys and Associates is currently under contract to assist EG&G in the implementation of C/SCSC. EG&G's final validation is scheduled for 4Q FY 96. This schedule includes three months of actual field use prior to validation.

<u>Equipment Acquisition:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Bechtel National, INC, San Francisco, CA					
DACAS7-89-C-0007, CPFF			\$284.3	N/A	9
Award: December 1, 1988					
Definitized: December 1, 1988					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$224.3	N/A	6	\$224.3	\$224.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date			\$	\$	
Net Change			\$0.0	\$0.0	

Explanation of Change: None.

This contract covers procurement of equipment for the demilitarization facilities at eight sites: TOCDF, ANCDF, UMCDF, PBCDF, PUCDF, BGCDF, ABCDF, NECDF, and the Chem Demil Training Facility (CDTF).

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15. Contract Information (Cont'd):

The initial contract was awarded and the original contract price was negotiated to cover the procurement of necessary equipment for all eight sites plus the CDTF; however, it was funded at a much lower level to only cover the equipment for Tooele and the CDTF. The original contract price includes only firm work to be performed and does not include options that may or may not be exercised.

Since the contract is incrementally funded each year to support the programmatic schedule and the construction requirements at each location, the current contract price reflects only the funds that have been placed on the contract to date. They include the management and passthrough costs associated with procuring equipment for Tooele, CDTF, Anniston, and partial funding for the management and passthrough costs for procuring the long lead equipment for Umatilla, Pine Bluff, and Pueblo. The current contract price does not include the full costs for procuring all the equipment necessary to build all sites.

The Contractor's estimate at completion represents what is currently on contract. If equipment is ordered to complete construction of all nine facilities, the contractor's estimate at completion remains \$677.0M.

			Initial Contract Price		
<u>Design & Systems Integ:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Ralph M. Parsons Company, Pasadena, CA					
DACAS7-86-C-0084, CPPF			\$52.4	N/A	9
Award: July 1, 1986					
Definitized: July 1, 1986					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$201.9	N/A	9	\$201.9	\$201.9	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			N/A	N/A	
Cumulative Variances To Date			\$	\$	
Net Change			\$0.0	\$0.0	

Explanation of Change: None.

The design engineering contract includes all eight CONUS demilitarization facilities: TOCDF, ANCDF, UMCDF, PBCDF, PBCDF, BGCDF, ABCDF, NECDF, and the CDTF. Initial contract award amount only included criteria development efforts; no design work was initially awarded. Design work is complete for two sites and is underway for six sites. Post-design support has been completed for

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15. Contract Information (Cont'd):

one site and is underway one additional site.

The current contract price reflects contract modifications necessary to implement ECPs arising from lessons learned at Johnston Atoll (JA) and Tooele. As of 1 Mar 96, the contract has 136 modifications.

This contract is incrementally funded with only certain tasks under the contract being authorized for each fiscal year. Contract figures include Military Construction, Procurement, and O&M funds.

The contractor's and PM's estimate at completion are based on work currently on contract. However, the anticipated final cost of this contract to finish the design work for all nine sites is shown in the PM's Life Cycle Cost Estimate. This additional work is not on contract, and is not reported here so as not to jeopardize future negotiations.

The reasons for cost growth on this contract reported in the original SAR remain valid and are repeated for convenience:

- Contract is incrementally funded each year.
- The contract completion date has changed from 1994 to 2003.
- Original contract was based on copying the JACADS design for each CONUS site whereas site-specific designs are now required.
- Lessons learned are being incorporated into all designs.
- There is significant work due to environmental and safety requirements which were not recognized in the original contract.

<u>Equipment Installation:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Raytheon Engrs & Construc, Denver, CO					
DACAS7-84-C-0081, CPFF	\$50.5		N/A		1
Award: September 1, 1984					
Definitized: September 1, 1984					
 			<u>Estimated Price At Completion</u>		
	<u>Current Contract Price</u>		<u>Contractor</u>	<u>Program Manager</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
	\$373.2	N/A	7	\$373.2	\$373.2
 			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date			\$	\$	
Net Change			\$0.0	\$0.0	

Explanation of Change: None.

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15. Contract Information (Cont'd):

This contract covers procurement of equipment for the incineration facilities at nine sites: JACADS, TOCDF, ANCDF, UMCDF, PBCDF, PUCDF, BGCDF, ABCDF, NECDF, and the CDTF.

This contract is incrementally funded each year, and equipment is procured to support annual construction requirements at each location. The initial contract was awarded to cover the procurement and installation of equipment for JACADS. Subsequent modifications have been made to complete the procurement of equipment for JACADS, TOCDF and the CDTF, as well as to order long lead time equipment for ANCDF, UMCDF, PBCDF, and PUCDF. However, the current contract price does not cover the full costs for all the equipment necessary to build these additional sites.

The Contractor's estimate at completion represents what is currently on contract. If equipment is ordered to complete construction of all ten facilities, the contractor's estimate at completion remains \$474.0M.

<u>Chem Demil Training Faci:</u>	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Physics, Columbia, MD DACAB7-89-C-0061, CPAF Award: June 26, 1989 Definitized: June 26, 1989	\$36.2	N/A	1

	<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$48.7	N/A	1	\$42.6	\$44.7
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$0.8	\$-0.2
Cumulative Variances To Date				\$0.9	\$-0.1
Net Change				\$0.1	\$0.1

Explanation of Change:

The contractor continues to perform tasks below cost and is decreasing the schedule variance. The current favorable cost and schedule variances are expected to continue.

Estimated Completion Date represents the date on which this contract expires Sep 96. Upon expiration, a new contract will be competitively awarded for continuation of training. This contract is over 90.4% complete and will no longer be reported in the SAR.

Chem Demil, December 31, 1995

15. Contract Information (Cont'd):

b. O & M --

<u>Operator & Maintenance:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
RE&C, Philadelphia, PA					
DACA87-86-C-0098, CPAF	\$9.8	N/A	1		
Award: August 25, 1986					
Definitized: August 25, 1986					

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$632.8	N/A	1	\$611.9	\$610.9

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

Explanation of Change: None.

Note: This contract is funded with Procurement, Operation and Maintenance, and Military Construction funds.

Initial contract price was to destroy the M55 rockets at JA. The current contract includes Operational Verification Testing (OVT) and subsequent demil campaigns within the period of performance. The follow-on contract will encompass additional demil campaigns necessary to complete the destruction of the JA chemical weapons stockpile.

This is an incrementally funded and negotiated contract and will continue to be during the O&M Phase.

Current contract ends on 26 Aug 96. Follow on contract (RE&C's Est. of \$510M for 5 years to end FY 01) in final negotiation stages. Authorization to proceed with identified pre-contract activities was issued (NTE \$100K). Follow-on contract has imposed Cost/Schedule Control System Criteria on the system contractor, and implementation activities were included in the pre-contract award.

Chem Demil, December 31, 1995

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

a. Program Status --

Total Program

- (1) Percent Program Completed: 47.4% (9 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 28.8% (\$3916.1 / \$13612.6)

CSDP

- (1) Percent Program Completed: 47.4% (9 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 29.4% (\$3293.2 / \$11195.6)

Alternative Technology

- (1) Percent Program Completed: 33.3% (3 yrs/9 yrs)
- (2) Percent Program Cost Appropriated: 20.5% (\$47.7 / \$232.5)

CSEPP

- (1) Percent Program Completed: 52.9% (9 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 42.6% (\$435.2 / \$1021.6)

NSCMP

- (1) Percent Program Completed: 35.7% (5 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 12.0% (\$140.0 / \$1162.9)

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

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

<u>Total Program</u>	<u>Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Balance To</u>	
<u>Appropriation</u>	<u>Years</u>	<u>Year</u>	<u>Year</u>	<u>Complete</u>	<u>Total</u>
	(FY88-95)	(FY96)	(FY97)	(FY98-2006)	
RDT&E	109.0	53.0	48.3	234.9	445.2
Procurement	968.4	259.0	273.6	1523.2	3024.2
MILCON	494.6	13.0	131.6	873.8	1513.0
O&M	1673.9	345.2	477.9	6133.2	8630.2
Total	3245.9	670.2	931.4	8765.1	13612.6

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

<u>CSDP</u>	<u>Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Balance To</u>	
<u>Appropriation</u>	<u>Years</u>	<u>Year</u>	<u>Year</u>	<u>Complete</u>	<u>Total</u>
	(FY88-95)	(FY96)	(FY97)	(FY98-2006)	
RDT&E	60.2	-	-	-	60.2
Procurement	832.3	207.5	229.8	1417.5	2687.1
MILCON	494.6	13.0	131.6	873.8	1513.0
O&M	1414.0	271.6	386.3	4863.4	6935.3
Total	2801.1	492.1	747.7	7154.7	11195.6

Chem Demil, December 31, 1995

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

Alternative Technology

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

Alternative Technology <u>Appropriation</u>	Prior <u>Years</u> (FY94-95)	Budget <u>Year</u> (FY96)	Budget <u>Year</u> (FY97)	Balance To <u>Complete</u> (FY98-2002)	<u>Total</u>
RDT&E	31.8	15.9	16.0	168.8	232.5
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	31.8	15.9	16.0	168.8	232.5

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

CSEPP <u>Appropriation</u>	Prior <u>Years</u> (FY88-95)	Budget <u>Year</u> (FY96)	Budget <u>Year</u> (FY97)	Balance To <u>Complete</u> (FY98-2004)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	132.5	26.1	21.7	64.3	244.6
MILCON	-	-	-	-	-
O&M	218.8	57.8	60.7	439.7	777.0
Total	351.3	83.9	82.4	504.0	1021.6

Chem Demil, December 31, 1995

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

NSCMP

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

NSCMP

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	17.0	37.1	32.3	66.1	152.5
Procurement	3.6	25.4	22.1	41.4	92.5
MILCON	-	-	-	-	-
O&M	41.1	15.8	30.9	830.1	917.9
Total	61.7	78.3	85.3	937.6	1162.9

c. Annual Summary -- CSDP

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY94 Dollars</u>		<u>Total Base Year \$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: 2050 Military Construction, Army

1988				3.7	3.0	3.0	3.0	3.0
1989				80.4	68.8	68.8	68.4	4.2
1990				7.2	6.4	6.4	6.4	4.1
1991				96.9	90.1	85.7	85.4	4.3
1992				150.1	143.7	96.2	92.7	3.0
1993				25.5	25.0			2.4
1994				119.1	123.4	1.6	1.6	2.0
Subtot				482.9	460.4	261.7	257.5	

Chem Demil, December 31, 1995

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

CSDP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2050 Military Construction, Army (Cont'd)

Army				482.9	460.4	261.7	257.5	
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Appropriation: 0400 RDT&E, Defense Agencies

1988				5.8	4.8	4.8	4.8	3.0
1989				20.6	17.6	17.6	17.6	4.2
1990				8.9	7.9	7.9	7.9	4.1
1991				5.7	5.3	5.3	5.3	4.3
1992				14.4	13.8	13.8	13.5	3.0
1993				6.6	6.5	6.5	4.7	2.4
1994				4.2	4.3	2.6	1.4	2.0
Subtot				66.2	60.2	58.5	55.2	

Appropriation: 0300 Procurement, Defense Agencies

1988			116.8	116.8	96.0	96.0	94.7	3.0
1989			42.2	42.2	36.1	36.1	35.6	4.2
1990	1		47.5	47.5	42.3	42.3	41.9	4.1
1991			104.7	104.7	97.3	97.3	97.2	4.3
1992			142.8	142.8	136.7	136.7	122.3	3.0

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
CSDP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1993			207.7	207.7	203.6	203.6	70.1	2.4
1994			23.6	23.6	24.1	17.5	8.8	2.0
1995			188.6	188.6	196.2	15.6	5.2	1.9
1996	1		196.9	196.9	207.5			2.0
1997			209.7	209.7	229.8			2.2
1998			276.0	276.0	309.1			2.2
1999			198.5	198.5	227.3			2.3
2000			97.8	97.8	114.5			2.2
2001	3		30.4	30.4	36.4			2.2
2002	2		531.3	531.3	649.4			2.2
2003	1		28.7	28.7	35.9			2.2
2004	1		33.4	33.4	42.7			2.2
2005			1.7	1.7	2.2			2.2
Subtot	9		2478.3	2478.3	2687.1	645.1	475.8	

There are recurring fly-away dollars for years with no quantities due to the complexity of the program and the length of time it takes to procure a demilitarization facility.

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16c. Program Funding Summary (Cont'd):
CSDP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0500 Military Construction, Defense Agencies

1995				32.1	34.2	2.5	0.4	1.9
1996				11.9	13.0			2.0
1997				118.9	131.6			2.2
1998				254.7	288.2			2.2
1999				240.1	277.8			2.3
2000				98.4	116.3			2.2
2001				55.5	67.1			2.2
2002				100.7	124.4			2.2
Subtot				912.3	1052.6	2.5	0.4	

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1988				113.8	93.5	93.5	93.5	3.0
1989				130.6	111.8	111.8	111.8	4.2
1990				177.2	157.9	147.3	147.3	4.1
1991				161.2	149.8	149.8	137.7	4.3
1992				188.1	180.1	180.1	177.2	3.0
1993				212.5	208.3	208.3	195.2	2.4
1994				218.1	222.4	222.0	212.3	2.0

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Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
CSDP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies (Cont'd)

1995				278.9	290.2	290.2	172.7	1.9
1996				257.7	271.6			2.0
1997				352.6	386.3			2.2
1998				312.0	349.5			2.2
1999				398.0	455.8			2.3
2000				522.4	611.4			2.2
2001				498.9	596.7			2.2
2002				721.0	881.4			2.2
2003				664.6	830.3			2.2
2004				702.0	896.2			2.2
2005				179.0	233.6			2.2
2006				6.4	8.5			2.2
Subtot				6095.0	6935.3	1403.0	1247.7	
DoD	9		2478.3	9551.8	10735.2	2109.1	1779.1	
Grand Total	9		2478.3	10034.7	11195.6	2370.8	2036.6	

*** UNCLASSIFIED ***

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
Alternative Technology

c. Annual Summary -- Alternative Technology

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies

1994				22.0	22.4	22.4	15.9	2.0
1995				9.0	9.4	8.9	4.8	1.9
1996				15.1	15.9			2.0
1997				14.6	16.0			2.2
1998				14.3	16.0			2.2
1999				26.6	30.5			2.3
2000				16.2	19.0			2.2
2001				12.5	15.0			2.2
2002				72.2	88.3			2.2
Subtot				202.5	232.5	31.3	20.7	
Grand Total				202.5	232.5	31.3	20.7	

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
CSEPP

c. Annual Summary -- CSEPP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 0300 Procurement, Defense Agencies

1989		9.2		9.2	7.9	7.9	7.8	4.2
1990		33.4		33.4	29.8	29.8	29.4	4.1
1991		19.0		19.0	17.7	17.7	14.0	4.3
1992		15.7		15.7	15.0	15.0	12.5	3.0
1993		36.7		36.7	36.0	36.0	9.3	2.4
1994		24.2		24.2	24.7	24.3	22.2	2.0
1995		1.3		1.3	1.4			1.9
1996	1	24.8		24.8	26.1			2.0
1997		19.8		19.8	21.7			2.2
1998		27.6		27.6	30.9			2.2
1999		3.3		3.3	3.8			2.3
2000		9.0		9.0	10.5			2.2
2001	3	5.7		5.7	6.8			2.2
2002	2	4.5		4.5	5.5			2.2
2003	1	2.9		2.9	3.6			2.2
2004	1	2.5		2.5	3.2			2.2
Subtot	8	239.6		239.6	244.6	130.7	95.2	

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
CSEPP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1988				3.0	2.5	2.5	2.5	3.0
1989				4.0	3.4	3.4	3.4	4.2
1990				15.6	13.9	13.9	13.9	4.1
1991				21.5	20.0	20.0	19.8	4.3
1992				26.5	25.4	25.4	23.9	3.0
1993				52.8	51.8	51.8	47.6	2.4
1994				46.7	47.6	47.6	41.0	2.0
1995				52.1	54.2	54.2	16.8	1.9
1996				54.8	57.8			2.0
1997				55.4	60.7			2.2
1998				56.7	63.5			2.2
1999				54.8	62.8			2.3
2000				54.3	63.5			2.2
2001				53.9	64.5			2.2
2002				53.3	65.2			2.2
2003				50.1	62.6			2.2
2004				45.1	57.6			2.2
Subtot				700.6	777.0	218.8	168.9	

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
CSEPP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies (Cont'd)

Grand Total	8	239.6		940.2	1021.6	349.5	264.1	
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c. Annual Summary -- NSCMP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies

1994		5.6		5.6	5.7	5.7	5.2	2.0
1995		10.9		10.9	11.3	9.2	2.6	1.9
1996		35.2		35.2	37.1			2.0
1997		29.5		29.5	32.3			2.2
1998		19.6		19.6	22.0			2.2
1999		6.5		6.5	7.5			2.3
2000		5.6		5.6	6.5			2.2
2001		5.6		5.6	6.7			2.2
2002		5.2		5.2	6.4			2.2
2003		5.3		5.3	6.6			2.2

Chem Demil, December 31, 1995

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

NSCMP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

2004		5.4		5.4	6.9			2.2
2005		2.7		2.7	3.5			2.2
Subtot		137.1		137.1	152.5	14.9	7.8	

Appropriation: 0300 Procurement, Defense Agencies

1994		2.2		2.2	2.2	2.2	1.8	2.0
1995		1.3		1.3	1.4	1.4	0.8	1.9
1996		24.1		24.1	25.4			2.0
1997		20.2		20.2	22.1			2.2
1998		9.7		9.7	10.9			2.2
1999		0.2		0.2	0.2			2.3
2000	1	22.5		22.5	26.3			2.2
2001		3.2		3.2	3.8			2.2
2002		0.2		0.2	0.2			2.2
Subtot	1	83.6		83.6	92.5	3.6	2.6	

Chem Demil, December 31, 1995

16c. Program Funding Summary (Cont'd):
NSCMP

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 0100 Operation & Maintenance, Defense Agencies

1992				2.3	2.2	2.2	2.2	3.0
1993				6.4	6.3	6.3	6.0	2.4
1994				20.9	21.3	21.2	15.2	2.0
1995				10.9	11.3	11.2	4.4	1.9
1996				15.0	15.8			2.0
1997				28.2	30.9			2.2
1998				34.6	38.8			2.2
1999				145.3	166.4			2.3
2000				67.8	79.4			2.2
2001				120.3	143.9			2.2
2002				130.8	159.9			2.2
2003				76.1	95.1			2.2
2004				74.3	94.9			2.2
2005				39.6	51.7			2.2
Subtot				772.5	917.9	40.9	27.8	
Grand Total	1	220.7		993.2	1162.9	59.4	38.2	

Chem Demil, December 31, 1995

17. Production Rate Data:

a. Deliveries to Date -- 0/0.

N/A

b. Approved Design-to-Cost Objective -- N/A.

a. Deliveries to Date -- 0/0.

N/A

b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

a. Deliveries to Date -- 0/0.

N/A

b. Approved Design-to-Cost Objective -- N/A.

a. Deliveries to Date -- 0/0.

N/A

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

CSDP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

b. Costs -- None.

c. Contractor Support Costs -- None.

Alternative Technology

Not applicable for Pre-Milestone II programs.

CSEPP

a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

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Chem Demil, December 31, 1995

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

CSEPP

- b. Costs -- None.
- c. Contractor Support Costs -- None.

NSCMP

- a. Assumptions and Ground Rules --

O & S costs are an integral part of the Chem Demil Program and as such are reported in sections 11, 12, 13, and 16 in this report.

- b. Costs -- None.
- c. Contractor Support Costs -- None.

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

PROGRAM: LHD - 1

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
LHD 1 Amphibious Assault Ship

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
AMPHIBIOUS WARFARE PROGRAM OFFICE MR. E.E. SHOULTS
PROGRAM EXECUTIVE OFFICE, CARRIERS, Assigned: April 29, 1985
LITTORAL WARFARE & AUXILIARY SHIPS AV 332-8511 COMM (703) 602-8511
ARLINGTON, VA 22242-5171

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

ROTS&E:

PE 0603564N (Shared) Project 0408
PE 0604567N (Shared) Project 01803, S0857

PROCUREMENT:

APPN 1611 ICN 3035 (Navy)

~~Derived from: OASD/OP&A 89949-00-101~~
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LHD - 1, December 31, 1995

5. (U) Related Programs:

Landing Craft, Air Cushion (LCAC)

6. (U) Mission and Description:

The ships primary amphibious mission is to embark, deploy and land elements of a Marine landing force in an assault by helicopters, landing craft amphibious vehicles, and by combinations of these methods. LHD 1 Class has a secondary/convertible mission for sea control and power projection. The LHD is a modification of the LHA Class design, with significant upgrades in combat systems, medical spaces, chemical biological radiological defense, aviation ordnance handling, and landing craft handling capabilities. The LHD will partially offset the loss in lift capacity resulting from block retirements of aging amphibious ships in the 1990's.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The LHD Program began in FY 1981 as part of an overall program to address impending block obsolescence of the Navy's amphibious lift capability. In June 1981, SECNAV proposed that the LHD have a convertible sea control mission; and, in November, directed that the Program be a modified LHA design.

A sole-source detail design and construction contract was awarded to Ingalls Shipbuilding Incorporated (ISI) in February 1984 for LHD 1. The ship was delivered in May 1989.

A competitive contract for LHD 2, with options for LHD 3 and 4 was awarded to ISI in September 1986. The options for LHD 3 and 4 were exercised November 1987 and October 1988, respectively. LHD 2, 3 and 4 were delivered to the Navy July 1992, August 1993 and November 1994, respectively.

A competitive contract for the LHD 5, with unevaluated and undefinitized options for LHD 6 and 7, was awarded to ISI in December 1991 and construction began 25 July 1994.

b. (U) Significant Developments Since Last Report --

LHD 4 was commissioned 11 February 1995 and Final Contract Trials were completed 28 July 1995. LHD 6 Keel Laying Ceremony was held on 18 April 1995. A contract option for LHD 7 was awarded to ISI on 28 December 1995.

The LHD 1 Program has been shown to satisfy the mission requirement.

c. (U) Changes Since As Of Date -- None.

LHD - 1, December 31, 1995

8. (U) Threshold Breaches:

There are currently no Acquisition Program Baseline (APB) (dated 11 Feb 94) breaches or Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone I	OCT 81	OCT 81	OCT 81
Milestone II SAIP	JUL 82	JUL 82	JUL 82
Start Contract Design	AUG 82	AUG 82	AUG 82
Milestone IIIA Production-Decision	JUN 83	JUN 83	JUN 83
Award Lead Ship Contract	DEC 83	FEB 84	FEB 84
Milestone IIIB Production-Decision	JUL 85	AUG 85	AUG 85
Approve Full-Production (AFP)	AUG 85	AUG 85	AUG 85
Launch First Ship	AUG 87	AUG 87	AUG 87
Acceptance Trials (Lead Ship)	FEB 89	FEB 89	MAR 89
Lead Ship Delivery	MAR 89	MAR 89	MAY 89
Material Support Date	MAR 89	MAR 89	JUL 89
Naval Support Date	MAY 90	MAR 93	MAR 93
IOC	MAY 90	MAY 90	NOV 90

IOC - Reflects date the lead ship is ready for operational deployment.

b. (U) Previous Change Explanations --

Actual contract award was Feb 1984. Initial Builders Trials (BT) were not fully successful causing a six week delay in delivery. Due to late receipt of Provisioning Technical Documentation, the Material Support Date (MSD) was rescheduled to Jul 89 and Naval Support Date (NSD) was rescheduled to Oct 90. NSD was also extended to Mar 93 based on lack of support for 11 Shipbuilder Furnished Systems. IOC was rescheduled to Oct 90 due to the delivery slippage and the need for a longer Post Shakedown Availability (PSA). Subsequently, IOC was changed from Oct 90 to Nov 90 as a result of concurrent unplanned Carrier availabilities which delayed the start of PSA.

c. (U) Current Change Explanations -- NONE

d. (U) References --

(U) Development Estimate:

SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

LHD - 1, December 31, 1995

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

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated February 11, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Troops	1873	1873 / 1873	1894	1894
Vehicle Square (ft^2)	22900	22900 / 22900	22900	22900
Cargo Cube (ft^3)	109000	109000 / 109000	109000	109000
LCAC	3	3 / 3	3	3
Length (ft)	840	844 / 844	844	844
Beam (ft)	106	106 / 106	106	106
Draft (full load) (ft/inches)	26'	26'8" / 26'8"	26'8"	26'8"
Displacement (full load)	39400	40533 / 40533	40533	40533
Offload Capability (tons/hr)	300	300 / 300	300	300
Propulsion	Steam	Steam / Steam	Steam	Steam
Shaft Horsepower	70000	70000 / 70000	70000	70000
No. of Screws	2	2 / 2	2	2
Medical Facilities (operating rooms)	6	6 / 6	6	6

(b)(1)

Close in Weapon System	3	3 / 3	3	3
Self Defense Missile System	2	2 / 2	2	2

b. (U) Previous Change Explanations --

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.

c. (U) Current Change Explanations -- NONE

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

d. (U) References --

(U) Development Estimate:

SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated February 11, 1994.

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

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	39.9	48.9	42.8
Procurement	2891.9	6432.1	5999.4
Sailaway	(2872.5)		(5977.2)
Peculiar Support	(10.1)		(11.5)
Initial Spares	(9.3)		(10.7)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 82 Base-Year \$	<u>2931.8</u>	<u>6481.0</u>	<u>6042.2</u>
Escalation	1519.2	1943.2	1865.7
Development (RDT&E)	(3.7)	(6.0)	(5.5)
Procurement	(1515.5)	(1937.2)	(1860.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	<u>4451.0</u>	<u>8424.2</u>	<u>7907.9</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	3	7	7
Total	3	7	7

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

SECNAV Memo dated 2 December 1982, subject "LHD 1 Class Amphibious Assault Ship SAIP"; LHD 1 Class NDCP dated 15 August 1985.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated February 11, 1994.

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

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY82\$)	6042.2	6481.0	
(2) Quantity	7	7	
(3) Unit Cost	863.17	925.86	-6.77
b. (U) Procurement			
(1) Cost (BY82\$)	5999.4	6432.1	
(2) Quantity	7	7	
(3) Unit Cost	857.06	918.87	-6.73

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	0.0	4451.0
Previous Changes:				
Economic	-0.4	-1443.1	-	-1443.5
Quantity	-	+5552.1	-	+5552.1
Schedule	+4.5	+28.1	-	+32.6
Engineering	-	+12.3	-	+12.3
Estimating	+0.6	+55.6	-	+56.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4.7	+4205.0	-	+4209.7
Current Changes:				
Economic	-	159.8	-	+159.8
Quantity	-	-	-	-
Schedule	-	-360.8	-	-360.8
Engineering	-	2.0	-	+2.0
Estimating	-	-553.8	-	-553.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-752.8	-	-752.8
Total Changes	+4.7	+3452.2	-	+3456.9
Current Estimate	48.3	7859.6	-	7907.9

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

a. (U) Summary (FY 1982 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	39.9	2891.9	0.0	2931.8
Previous Changes:				
Quantity	-	+3395.2	-	+3395.2
Schedule	+3.4	+80.7	-	+84.1
Engineering	-	+7.5	-	+7.5
Estimating	-0.5	-75.0	-	-75.5
Other	-	-	-	-
Support	-	+2.8	-	+2.8
Subtotal	+2.9	+3411.2	-	+3414.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	1.5	-	+1.5
Estimating	-	-305.2	-	-305.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-303.7	-	-303.7
Total Changes	+2.9	+3107.5	-	+3110.4
Current Estimate	42.8	5999.4	-	6042.2

b. (U) Previous Change Explanations --

RD&E

- Economic: Revised economic escalation rates.
- Schedule: Increase based on rephasing of R&D to accommodate rescheduling of FY92 ship to FY91.
- Estimating: Decrease based on returned cost for LHD 2, 3, and 4. Increases based on repricing of program requirements for LHD 4, 5, and 6; and increase to complete contract design on LHD 5.

Procurement

- Economic: Revised economic escalation rates.
- Quantity: Increase based on addition of LHD 4 - 7, including associated advance procurement; and

LHD - 1, December 31, 1995

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

- re-categorization from prior SARs for outfitting and post delivery reported in Support.
- Schedule: Decrease based on rescheduling of LHD 5 and LHD 6 and associated Advance Procurement. Increase based on mis-categorization of acquisition strategy change from Schedule to Estimating and rescheduling LHD 7 from FY00 to FY01.
- Engineering: Decrease based on deletion of expanded Collective Protection System for LHD 5. Increase based on configuration for combat and ship system improvement, new requirements for women at sea, solid waste system and C3 communication upgrade for LHD 6.
- Estimating: Reductions based on very favorable competitive basic award (LHD 2, 3 and 4); actual cost for completed program; reduction for GFE repricing; mis-categorization of acquisition strategy change from schedule and undistributed congressional funds for FY94 FFR&D Centers. Increases based on revised program estimates; deferred work on LHD 2 and 3; addition of LHD 6 and 7; lump sum benefit request for equitable adjustment; reduced vendor/business base, refurbished systems, CFE to GFE savings, revised outfitting and post delivery costs and re-categorization from prior SARs for outfitting and post delivery reported in support category.
- Support: Adjustments based on prior year inflation.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-89.0
Economic adjustment for negative program change. (Economic)	N/A	+248.8
Rescheduled LHD 7 from FY01 to FY96. (Schedule)	--	-360.8
Increase based on installation of AN/SPN-41 (Engineering)	+1.5	+2.0
Adjustment for Current and Prior Inflation. (Estimating)	-6.5	-9.2
Actual cost on completed portion of program (Estimating)	-8.6	-12.2

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised outfitting and post delivery cost estimates for FY00 and prior (Estimating)	-8.1	-12.3
Escalation increase to FY91 and FY94 Program (Estimating)	+6.1	+8.7
FY96 Budget Reduction to support the Bosnia Operations. (Estimating)	-25.5	-39.1
Reduction based on revised Shipbuilding estimate (Estimating)	-262.6	-489.7
Procurement Subtotal	-303.7	-752.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1483.7	-183.4	-54.7	-46.9	2.0	-71.1	--	--	-354.1	1129.7

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

a. (U) Procurement --

(U) LHD 5 CONSTRUCTION:
 INGALLS SHIPBUILDING, INC, PASCAGOULA, MS
 N00024-92-C-2204, FPI
 Award: December 20, 1991
 Definitized: December 20, 1991

Target	Initial Contract Price	
	<u>Ceiling</u>	<u>Qty</u>
\$707.0	\$808.0	1

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$739.6	\$841.3	1

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$807.4	\$807.1

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-11.4	\$-19.1
Cumulative Variances To Date (12/31/95)	\$15.5	\$-13.1
Net Change	\$26.9	\$6.0

Explanation of Change:

Cost Variance - The majority of favorable variance reported by the

LHD - 1, December 31, 1995

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

contractor is identified with material and construction related savings partially offset by G&A growth.

Schedule Variance - The majority of favorable variance reported by the contractor results from material and engineering labor related recoveries.

The Navy approved a reprogramming in May 93 in the amount of \$127.7M. When the reprogramming without management reserve (\$2.9M) is taken into consideration, the negative cost variance to the target cost is \$76.5M.

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total overrun of \$135.6M, which would result in a net contractor profit of \$20.9M.

The Current Contract Price includes an additional \$24.3M of Firm Fixed Price Construction Contract Line Items (CLINS), while the Initial Contract Price reflects only the Construction CLIN.

(U) <u>LHD 6 CONSTRUCTION:</u> INGALLS SHIPBUILDING, INC, PASCAGOULA, MS N00024-92-C-2204, FPI Award: December 11, 1992 Definitized: December 11, 1992	Initial Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$760.9	\$779.2	1	\$766.6	\$769.7
	Current Contract Price			Cost Variance	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Schedule Variance</u>	
	\$779.8	\$797.6	1	\$-5.6	\$-0.5
				\$28.9	\$0.9
				\$34.5	\$1.4

Explanation of Change:

Cost Variance: The majority of favorable variance is identified with construction related savings partially offset by G&A growth.

Schedule Variance: The majority of favorable variance is identified with material recoveries partially offset by construction related delays.

LHD - 1, December 31, 1995

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

The PM's Estimated Price at Completion takes these variances into consideration.

The Program Manager's Estimated Price at Completion is based on the Government's share of a projected total underrun of \$-20.2M, which would result in a net contractor profit of \$123.2M.

(U) <u>LHD 7 CONSTRUCTION:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
INGALLS SHIPBUILDING, INC, PASCAGOULA,, MS					
N00024-92-C-2204, .FPI			\$771.8	\$791.5	1
Award: December 28, 1995					
Definitized: December 28, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$771.8	\$791.5	1	N/A	\$771.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date			N/A	\$0.0	
Net Change			\$0.0	\$0.0	

Explanation of Change: None.

Contractor Estimated Price at Completion and Variance information is not available since this contract was awarded on 28 Dec 95. Data reporting requirements do not require Contractor submission of cost and schedule data until 90 days after award.

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

a. (U) Program Status --

- (1) Percent Program Completed: 66.7% (16 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 98.6% (\$7793.4 / \$7907.9)

LHD - 1, December 31, 1995

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

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY81-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2004)	<u>Total</u>
RD&E	48.3	-	-	-	48.3
Procurement	6457.9	1287.2	7.3	107.2	7859.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	6506.2	1287.2	7.3	107.2	7907.9

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY82 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Excl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1981				0.9	0.9	0.9	0.9	10.6
1982				11.1	11.4	11.3	11.2	7.6
1983				17.9	19.2	19.2	18.8	4.9
1984				0.8	0.9	0.9	0.9	3.8
1985				1.7	2.0	2.0	2.0	3.4
1986				0.3	0.4	0.4	0.4	2.8
1987				0.5	0.6	0.6	0.6	2.7
1988				0.6	0.8	0.8	0.8	3.0
1989				2.8	3.7	3.7	3.6	4.2

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1990				5.5	7.4	6.7	6.2	4.0
1991				0.7	1.0	1.0	0.8	4.3
Subtot				42.8	48.3	47.5	46.2	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1982				41.3	45.0	45.0	45.0	7.5
1983				48.4	53.7	53.7	53.7	3.8
1984	1	150.0	1111.4	1159.2	1310.1	1308.4	1292.5	3.6
1985				34.0	39.2	39.2	39.1	2.1
1986	1		769.1	707.8	835.0	830.6	819.9	1.4
1987				29.8	35.9	35.9	35.0	1.5
1988	1		635.5	613.1	761.3	756.1	746.1	2.6
1989	1		614.1	591.3	756.5	732.9	703.2	3.3
1990				36.8	48.4	46.6	45.9	1.1
1991	1		918.1	874.8	1186.3	904.7	650.6	1.6
1992				20.5	28.7	28.4	27.4	2.5
1993				239.8	339.4	294.4	189.8	3.2
1994	1		862.3	657.4	963.4	760.5	349.6	4.2

LHD - 1, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY82 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1995				36.7	55.0	9.5	4.5	3.8
1996	1		916.7	840.4	1287.2	994.0		2.0
1997				4.7	7.3			2.2
1998				13.9	22.3			2.2
1999				8.7	14.3			2.3
2000				13.7	22.9			2.2
2001				1.0	1.7			2.2
2002				19.6	34.2			2.2
2003				4.5	8.1			2.2
2004				2.0	3.7			2.2
2005								2.2
2006								2.2
Subtot	7	150.0	5827.2	5999.4	7859.6	6839.9	5002.3	
Grand Total	7	150.0	5827.2	6042.2	7907.9	6887.4	5048.5	

LHD - 1, December 31, 1995

17. (U) Production Rate Data:

- a. (U) Deliveries to Date --
- | | |
|-------------|--------------------|
| RD&E | <u>Plan/Actual</u> |
| Procurement | 0/0
4/4 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

O&S costs for LHD 1 Class ships were developed from historical (VAMOSC) data for the antecedent LHA 1 Class as well as limited data that has come from the operations of LHD 1. Greater emphasis is still being placed on LHA 1 data for two reasons: the limited size of the LHD 1 data, and a belief that the first few years of operations of a lead ship are not representative of the ship's future, "normal" operating costs.

Personnel retirement costs are included as part of indirect costs and are based on 33 percent of officer and enlisted direct personnel costs.

Assumed service life is stated as 40 years for ships of the LHD 1 Class. All costs are in FY82 constant dollars, the year of the first construction contract for an LHD 1 Class ship.

b. (U) Costs -- (FY 1982 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per LHD 1	Avg Annual Cost Per LHA 1 (Antecedent)
Direct Personnel	17.6	14.9
Direct Operations	9.6	10.2
Direct Maintenance	18.1	16.5
Indirect Costs	6.4	5.5
Total	51.7	47.1

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: ATIRCM/CMWS

AS OF DATE: December 31, 1995

INDEX

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1. (U) Designation and Nomenclature (Preferred Name):
Advanced Threat Infrared Countermeasure/Common Missile
Warning System (ATIRCM/CMWS)

2. (U) DoD Component: Army

Joint Participants:

U.S. Navy/U.S. Marine Corps, U.S. Air Force

3. (U) Responsible Office and Telephone Number:

Aviation Electronic Combat PMO

Col Roy P. Oler

ATTN: SFAB-AV-AEC

Assigned: August 1, 1994

4300 Goodfellow Boulevard

AV 693-5527 COMM 314-263-5527

Saint Louis, MO 63120-1798

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

RDT&E:

PE 64270A Project D665 (Shared)

PE 64270F, 64270N

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FOR OPEN PUBLICATION

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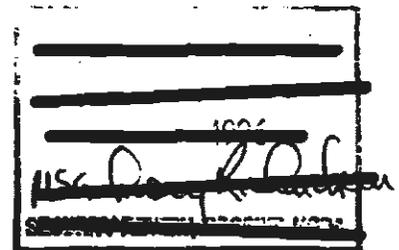
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~~Derived From: [redacted]~~
~~Security [redacted]~~

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ATIRCM/CMWS, December 31, 1995

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

PROCUREMENT:

APFN 2031 ICN AZ3507 (Army)
APFN 2031 ICN AA0976 (Army) (Shared)

5. (U) Related Programs:

AN/AAR-47 Missile Approach Detector, AN/AAR-54 Passive Missile Approach Warning System (MAWS), M-130 General Purpose Dispenser, AN/ALQ-144A(V)1/3 Countermeasures Set, AN/ALQ-156(V)1/2/3 Missile Approach Detector, M-206 Flare Decoys, Advanced Infrared Countermeasure Munitions (AIRCMM), Advanced Threat Radar Jammer (ATRJ), Directional Infrared Countermeasures (DIRCM).

6. (U) Mission and Description:

The ATIRCM/CMWS is a U.S. Army program to develop, test, and integrate defensive infrared (IR) countermeasures capabilities into existing, current generation host platforms for more effective protection against a greater number of IR guided missile threats than afforded by currently fielded IR countermeasures. The CMWS component system is a joint U.S. Army, U.S. Navy, U.S. Marine Corps, and U.S. Air Force program to develop, test, and integrate common missile warning system on tactical aircraft and rotorcraft for protection against IR guided missile threat (warning). The ATIRCM/CMWS is the core system of the U.S. Army's modular Suite of Integrated Infrared Countermeasures (SIIRCMM).

For the Army, the current Infrared Countermeasure (IRCM) configuration for the fleet helicopter consists of the AN/ALQ-144A for the AH-64 and the UH/MH-60 and the AN/ALQ-156 missile detector and M-130 flare/chaff dispenser for the CH/MH-47 and the AN/ALQ-144A, AN/ALQ-156 and M-130 on the EH-60. The ATIRCM/CMWS will selectively replace the AN/ALQ-144A, AN/ALQ-156 or AN/AAR-47, and the M-130. For the Navy and the Air Force, no existing equivalent systems exist.

7. (U) Program Highlights:

a. (U) Significant Historical Developments -- Preliminary tests of the DEMVAL prototype version of the ATIRCM during 1994 indicated successful performance against a variety of missiles. During 1994, the Services considered merging the ACAT II U.S. Navy/U.S. Air Force MAWS program with the ACAT III U.S. Army ATIRCM program. Because the previous ACAT III ATIRCM program became an ACAT IC ATIRCM/CMWS program within six months of the Milestone II ASARC date, acceptable and approved streamlining has been applied.

In January 1995, the Undersecretary of Defense for Acquisition and Technology (USD(A&T)), approved: (1) the recommendation from the Service Acquisition Executives to jointly develop a CMWS as a

*** UNCLASSIFIED ***

ATIRCM/CMWS, December 31, 1995

7a. (U) Program Highlights (Cont'd):

component system of the U.S. Army ATIRCM program, and (2) the proposed streamlined joint program acquisition strategy. The USD(A&T) designated the U.S. Army as the lead Service, and designated the U.S. Army Acquisition Executive as the Milestone Decision Authority, in consultation with the other Service Executives.

The Milestone II decision review occurred on June 23, 1995. The ASARC members agreed to conditionally grant approval for the ATIRCM/CMWS program to proceed into EMD with the constrained excursion option presented. The conditional approval required a coordinated approved SIIRCM/CMWS ORD, an integrated product team (IPT) coordinated TEMP, and finalization and presentation of the multi-service memorandum of understanding (MOU) to the Service Acquisition Executives. In addition, the ASARC decision required a briefing on the results of Initial Operational Test and Evaluation (IOT&E), and a Production Readiness Review (PRR) is required before Milestone III.

The ORD was approved in September 1995, and the TEMP was IPT coordinated in December 1995. The MS II EMD contract was awarded to Sanders, a Lockheed-Martin company on September 27, 1995. The System Design Review (SDR) was held February 23, 1996 and all actions closed out by the end of March 1996. The contractor is on schedule for Preliminary Design Review (PDR) to be completed by June 1996. No problems relative to any cost performance or schedule parameter have been noted to date.

This is the initial SAR for the ATIRCM/CMWS program.

The ATIRCM/CMWS program is expected to satisfy the mission requirements.

b. (U) Significant Developments Since Last Report --
None - Initial SAR

c. (U) Changes Since As Of Date --
The Army Acquisition Executive approved the Acquisition Program Baseline on March 29, 1996.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated March 29, 1996 and there are no Nunn-McCurdy unit cost breaches.

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ATIRCM/CMWS, December 31, 1995

9. (U) Schedule:

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
DEMVAL Contract Award	SEP 91	SEP 91	SEP 91
Technical Test			
Start	JUL 94	JUL 94	JAN 94
Complete	DEC 95	DEC 95	JUN 94
Milestone I/II	JUN 95	JUN 95	JUN 95
EMD Contract Award	SEP 95	SEP 95	SEP 95
Preliminary Design Review Complete	JUN 96	JUN 96	JUN 96
Critical Design Review Complete	SEP 96	SEP 96	SEP 96
First Prototype Delivery	JUL 97	JUL 97	JUL 97
Developmental Testing			
Start	MAY 98	MAY 98	MAY 98
Complete	FEB 99	FEB 99	FEB 99
Operational Testing			
Start	JAN 99	JAN 99	FEB 99
Complete	JAN 00	JAN 00	DEC 99
Milestone III	FEB 00	FEB 00	FEB 00
Production Contract Award	APR 00	APR 00	APR 00
First Production Delivery	APR 01	APR 01	APR 01
First Unit Equipped without	NOV 01	NOV 01	NOV 01

(b)(1) [Redacted]

Organic Support Available	FEB 05	FEB 05	FEB 05
Depot Level Maintenance Support Established	FEB 05	FEB 05	FEB 05

b. (U) Previous Change Explanations -- None - Initial SAR

c. (U) Current Change Explanations -- None - Initial SAR

d. (U) References --

(U) Development Estimate:

Approved Acquisition Program Baseline dated March 29, 1996.

(U) Approved Program:

Approved Acquisition Program Baseline dated March 29, 1996.

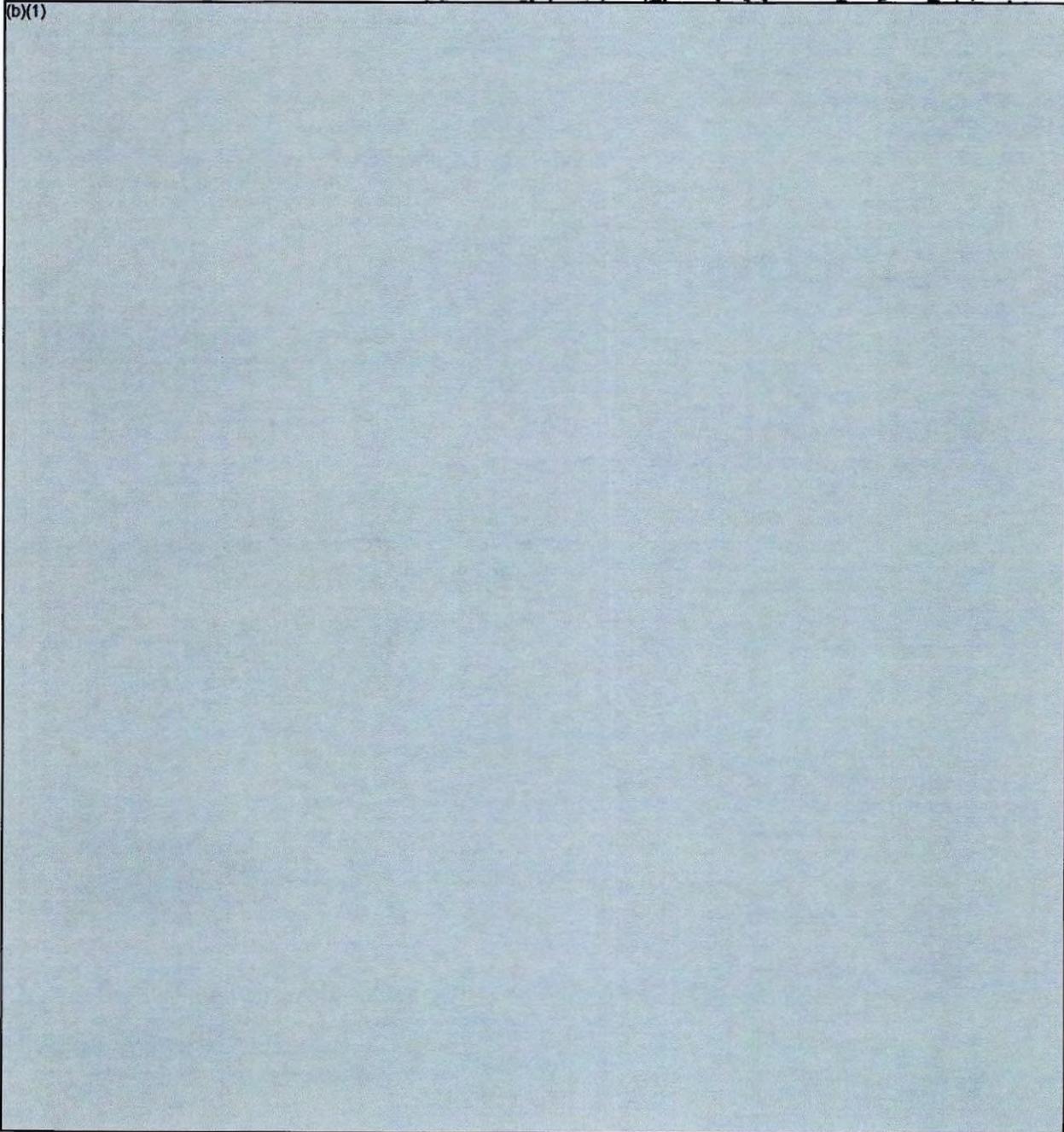
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ATIRCM/CMWS, December 31, 1995

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current
-----------------------	---------------------	-------------------	---------

(b)(1)



~~*****~~

ATIRCM/CMWS, December 31, 1995

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

- b. (U) Previous Change Explanations -- None - Initial SAR
- c. (U) Current Change Explanations -- None - Initial SAR
- d. (U) References --

(U) Development Estimate:

Approved Acquisition Program Baseline dated March 29, 1996.

(U) Approved Program:

Approved Acquisition Program Baseline dated March 29, 1996.

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

a. (U) Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	516.4	516.4	507.6
Procurement	2112.0	2112.0	2131.2
Recurring Flyaway	(1772.2)		(1788.3)
Nonrecurring Flyaway	(142.6)		(143.9)
Total Flyaway	(1914.8)		(1932.2)
Other Wpn System Costs	(131.0)		(132.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(66.2)		(66.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	2628.4	2628.4	2638.8
 Escalation	 733.2	 733.2	 739.4
Development (RDT&E)	(43.4)	(43.4)	(43.1)
Procurement	(689.8)	(689.8)	(696.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	3361.6	3361.6	3378.2
 b. (U) Quantity --			
Development (RDT&E)	25	25	25
Procurement	<u>3069</u>	<u>3069</u>	<u>3069</u>
Total	3094	3094	3094

Note: Excludes 15 RDTE prototypes from the SAR Baseline and 15 from the Current Estimate that are not considered fully configured.

The unit of measure represents aircraft.
There are no LRIP quantities approved for this program.

ATIRCM/CMWS, December 31, 1995

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

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Approved Acquisition Program Baseline dated March 29, 1996.

(U) Approved Program:

Approved Acquisition Program Baseline dated March 29, 1996.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAR 96 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY96\$)	2638.8	2628.4	
(2) Quantity	3094	3094	
(3) Unit Cost	0.853	0.850	0.40
b. (U) Procurement			
(1) Cost (BY96\$)	2131.2	2112.0	
(2) Quantity	3069	3069	
(3) Unit Cost	0.694	0.688	0.91

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	559.8	2801.8	0.0	3361.6
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.1	23.3	-	+14.2
Other	-	-	-	-
Support	-	2.4	-	+2.4
Subtotal	-9.1	+25.7	-	+16.6
Total Changes	-9.1	+25.7	-	+16.6
Current Estimate	550.7	2827.5	-	3378.2

ATIRCM/CMWS, December 31, 1995

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

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	516.4	2112.0	0.0	2628.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.8	17.4	-	+8.6
Other	-	-	-	-
Support	-	1.8	-	+1.8
Subtotal	-8.8	+19.2	-	+10.4
Total Changes	-8.8	+19.2	-	+10.4
Current Estimate	507.6	2131.2	-	2638.8

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised estimate of development costs since APB approval. (Estimating)	-8.8	-9.1
(2) <u>Procurement</u>		
Revised estimate of procurement costs since APB approval. (Estimating)	+17.4	+23.3

ATIRCM/CMWS, December 31, 1995

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate of support costs since APB approval. (Support)	+1.8	+2.4
Procurement Subtotal	<u>+19.2</u>	<u>+25.7</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.086	--	--	--	--	0.005	--	0.001	0.006	1.092

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

a. (U) RDT&E --	Initial Contract Price		
(U) <u>ATIRCM/CMWS Black Boxes:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Sanders Inc, Nashua, NH			
DAAB07-95-C-D606, CPAF	\$57.0	N/A	40
Award: September 27, 1995			
Definitized: September 27, 1995			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$57.0	N/A	\$63.8	\$106.8
		<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances		N/A	N/A
Cumulative Variances To Date (01/26/96)		\$0.1	\$-0.7
Net Change		\$0.1	\$-0.7

Explanation of Change:

The unfavorable schedule variance is due to the delay in selecting the processor. The delay has postponed processor dependent work. Also, market availability of required skills has affected the schedule.

The favorable cost variance is not considered significant.

ATIRCM/CMWS, December 31, 1995

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

This is the first time this contract appears in the SAR.

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

a. (U) Program Status --

(1) Percent Program Completed: 26.9% (7 yrs/26 yrs)

(2) Percent Program Cost Appropriated: 3.6% (\$122.8 / \$3378.2)

Expenditures and obligations reflect program office records as of 03/05/96.

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY90-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2015)	<u>Total</u>
RDT&E	58.5	64.3	76.7	351.2	550.7
Procurement	-	-	-	2827.5	2827.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	58.5	64.3	76.7	3178.7	3378.2

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1990				0.6	0.5	0.5	0.5	4.1
1991				2.9	2.7	2.7	2.7	4.3
1992				15.5	14.5	14.4	14.4	3.0

ATIRCM/CMWS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1993				8.3	8.0	8.0	8.0	2.4
1994				7.7	7.5	7.5	7.5	2.0
1995				8.1	8.1	8.1	5.1	1.9
1996				16.4	16.7	9.6	0.2	2.0
1997				17.3	18.0			2.2
1998				20.7	22.0			2.2
1999				24.5	26.7			2.3
2000				2.7	3.0			2.2
2001				2.2	2.5			2.2
Subtot	25			126.9	130.2	50.8	38.4	

Appropriation: 2031 Aircraft Procurement, Army

1999		1.4	8.4	10.8	12.0			2.3
2000	14	7.7	14.2	27.6	31.4			2.2
2001	5	12.1	8.9	27.0	31.4			2.2
2002	58	17.5	76.9	99.6	118.2			2.2
2003	81	11.5	78.6	100.2	121.5			2.2
2004	106	15.9	92.3	114.2	141.5			2.2

ATIRCM/CMWS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

2005	112	11.6	90.4	107.8	136.5			2.2
2006	112	14.3	72.4	93.9	121.5			2.2
2007	119	12.1	73.2	91.8	121.5			2.2
2008	73	7.2	46.3	60.3	81.5			2.2
2009	76	7.0	47.4	59.0	81.5			2.2
2010	59	13.7	40.5	57.7	81.5			2.2
2011	112	5.3	43.1	56.5	81.5			2.2
2012	120	2.7	49.3	55.3	81.5			2.2
2013			3.3	4.4	6.6			2.2
Subtot	1047	140.0	745.2	966.1	1249.6			
Army	1072	140.0	745.2	1093.0	1379.8	50.8	38.4	

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

1995				0.4	0.4	0.4	0.4	1.9
1996				7.1	7.2	3.5		2.0
1997				16.1	16.9			2.2
1998				14.3	15.5			2.2
1999				14.4	16.1			2.3

ATIRCM/CMWS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000				17.7	20.3			2.2
2001				16.3	19.3			2.2
2002				6.9	8.4			2.2
2003				0.8	1.0			2.2
Subtot				94.0	105.1	3.9	0.4	

Appropriation: 1506 Aircraft Procurement, Navy

1999		0.4	15.1	17.2	19.8			2.3
2000	71	0.1	23.1	25.6	30.3			2.2
2001	46	0.1	26.1	28.2	34.3			2.2
2002	86	0.2	47.4	66.0	82.8			2.2
2003	43	0.1	32.7	34.0	44.0			2.2
2004	43	0.1	24.2	24.6	32.7			2.2
2005	69	0.1	36.9	37.1	50.9			2.2
2006	48	0.1	27.5	28.0	39.5			2.2
2007	48	0.1	26.3	26.5	38.6			2.2
2008	48	0.1	26.2	26.4	39.6			2.2
2009	48		26.1	26.3	40.6			2.2

ATIRCM/CMWS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (t)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2010	48		26.0	26.2	41.7			2.2
2011	48		26.0	26.1	42.8			2.2
2012	48		25.9	26.0	43.9			2.2
2013	48		25.8	26.0	45.1			2.2
2014	18		11.3	11.6	20.8			2.2
2015			0.9	1.0	1.9			2.2
Subtot	760	1.4	427.5	456.8	649.3			
Navy	760	1.4	427.5	550.8	754.4	3.9	0.4	

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

1995				16.9	16.8	13.4		1.9
1996				39.4	40.4	7.2		2.0
1997				39.6	41.8			2.2
1998				39.9	43.3			2.2
1999				70.5	78.9			2.3
2000				49.9	57.5			2.2
2001				20.2	24.0			2.2
2002				7.0	8.6			2.2

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ATIRCM/CMWS, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2003				3.3	4.1			2.2
Subtot				286.7	315.4	20.6		

Appropriation: 3010 Aircraft Procurement, Air Force

1999		0.9	34.2	7.2	8.4			2.3
2000	59	0.3	62.9	49.9	60.0			2.2
2001	166	0.4	85.9	89.8	111.2			2.2
2002	268	0.3	123.2	149.7	190.8			2.2
2003	308	0.3	129.7	157.6	206.9			2.2
2004	230	0.2	82.8	116.0	156.9			2.2
2005	143	0.1	57.8	90.9	126.6			2.2
2006	80		20.4	44.7	64.2			2.2
2007	8		8.9	2.4	3.5			2.2
2008			9.8	0.1	0.1			2.2
Subtot	1262	2.5	615.6	708.3	928.6			
USAF	1262	2.5	615.6	995.0	1244.0	20.6		
Grand Total	3094	143.9	1788.3	2638.8	3378.2	75.3	38.8	

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ATIRCM/CMWS, December 31, 1995

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

Average of twenty year operational life of 3069 baseline quantity. Baseline quantity assumes system composite configuration for the sum of the airframes. Includes all O&M funded human resource requirements not identified in development or procurement. Total ATIRCM system Mean Time Between Failure (MTBF) of 1000 hours. No airframe (group-A) operations and support costs are associated with the system (group-B).

Source of estimate is the methodology approved by the Army Cost Board June 1995.

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

Cost Element	Avg Annual Cost Per Aircraft Composite System	
Operations & Support	5.9	N/A
Total	5.9	N/A

- c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DP-COMP(O&A)823)
PROGRAM: SINGARS

AS OF DATE: December 31, 1995

INDEX

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1. Designation and Nomenclature (Preferred Name):
Single Channel Ground and Airborne Radio System (SINGARS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
Project Manager, Tactical Radio COL Lalit Piplani
Communication Systems Assigned: July 31, 1994
ATTN: SPAE-C3S-TRC AV 987-3063 COMM (908) 427-3063
Fort Monmouth, NJ 07703-5505

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63746 (Shared) Project D555 (Shared)
PE 64805 Project D282, D098

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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

PROCUREMENT:

APPN 1109 ICN 043638 (Navy)
APPN 1810 ICN 068342 (Navy)
APPN 1810 ICN 068892 (Navy)
APPN 1810 ICN 24163N (Navy)
APPN 2031 ICN AA0974 (Army) (Shared)
APPN 2031 ICN AZ3500 (Army)
APPN 2035 ICN B00500 (Army)
APPN 2035 ICN B00508 (Army)
APPN 2035 ICN B45500 (Army) (Shared)
APPN 2035 ICN BA9102 (Army) (Shared)
APPN 2035 ICN BA9520 (Army) (Shared)
APPN 2035 ICN BW0006 (Army)
APPN 2035 ICN J30500 (Army)
APPN 2035 ICN T99500 (Army) (Shared)
APPN 2035 ICN Z16800 (Army)
APPN 3080 ICN 27423F (Air Force)
APPN 2035 ICN BA9722 (Army)
APPN 2035 ICN BS9722 (Army)
APPN 2035 ICN MA9722 (Army)
APPN 0350 ICN 222000 (NGRE) (SHARED)
APPN 0350 ICN 230000 (NGRE)
APPN 0350 ICN 101025 (NGRE)
APPN 0350 ICN 104000 (NGRE)
APPN 0350 ICN 104025 (NGRE)
APPN 0350 ICN 107000 (NGRE)

5. Related Programs:

None

6. Mission and Description:

SINGGARS is a family of VHF-FM combat net radios which provides the primary means of command and control for Infantry, Armor and Artillery Units. The SINGGARS system is designed on a modular basis to achieve maximum commonality among the various ground and airborne system configurations. A common receiver-transmitter (RT) is used in the manpack and all vehicular configurations. The SINGGARS family of radios has the capability to transmit and receive voice, tactical data and record traffic messages and is consistent with NATO interoperability requirements. The system operates on any of the 2320 channels between 30-88 Megahertz and is designed to survive in a nuclear environment. Communication Security (COMSEC) for the basic (non-ICOM) radio is provided by use of the VINSON device. An Integrated COMSEC (ICOM) version of the SINGGARS is the currently produced version. The SINGGARS system is operable in a hostile environment through use of electronic counter-counter measures (ECCM). SINGGARS is replacing the currently standard manpack and

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6. Mission and Description (Cont'd):

vehicular radios, the AN/PRC-77 and the AN/VRC-12 family, respectively. An airborne version of the SINGGARS radio is replacing the currently standard aircraft radios, the AN/ARC-114 and AN/ARC-131.

7. Program Highlights:

a. Significant Historical Developments --

DA approved the SINGGARS ROC in Dec 74. In Jun 77, the VCSA direction resulted in a decision to proceed from Advanced Development (AD) directly into production. The SINGGARS ground radio production hardware was type classified standard at ASARC III in Sep 83. A single year production contract was awarded in Dec 83, Option 1 in Nov 84, Option 2 in May 85, Option 3 in Jun 89, and Option 4 in Dec 90 to ITT Aerospace/Communication Division (A/CD), Ft. Wayne, IN. The initial SINGGARS airborne production contract was awarded to ITT in May 85, Option 1 in Apr 88, Option 2 Apr 89, and Option 3 in Jan 91. The alternative source strategy was approved and documented in a Feb 87 Secretary of Defense Decision Memorandum (SDDM) to independently select and manage a second source which would be a form, fit, function equivalent to the ITT A/CD Integrated COMSEC (ICOM) SINGGARS at the Line Replaceable Unit (LRU) level. Award of the second source ground production contract was made to General Dynamics (GD) in Jul 88 with Option 1 awarded in Mar 91, Option 2 in Nov 92, and Option 3 in Aug 93. A Milestone IIIB review in Dec 90 approved full-rate production awards for the ITT ground and airborne radios in Dec 90 and Jan 91 respectively. A sole-source single year contract was awarded to ITT in Mar 92 with Option 1 awarded in Mar 93 to align with GD for head-to-head competition commencing in FY94.

An Aug 93 program review resulted in Defense Acquisition Executive (DAE) approval for award of General Dynamics Option 3 at full-rate production. The SINGGARS program was reclassified from Acquisition Category 1D (DAB) to 1C (Component). Head-to-head competition between ITT and GD commenced in FY94 with ITT receiving a 60% share and GD receiving a 40% share of total quantities.

b. Significant Developments Since Last Report --

The FY95 head-to-head competition between ITT and GD resulted in ITT receiving a 55% share and GD receiving a 45% share of total quantities. System Improvements continue as part of the planned evolution of the SINGGARS radio. Improvements include Global Position System Interface, Improved data capability for the Combat Net Radio, Improved Forward Error Correction for low speed data modes, Automated Interface in the Automated Common User System, Internet Controller (INC) software development, and improved MANPRINT to include the Hand-held Remote Control Unit. The Army Acquisition Objective of 213,000 radios was revised to 227,619 taking into account ongoing and projected force structure changes

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7b. Program Highlights (Cont'd):

and reflects Active Army, Army Reserves, and Army National Guard units. The Congress was made aware of the significant savings to be achieved through accelerated procurement of SINGGARS radios and provided an increase of \$54.1M to buy additional radios in FY96. The Army added funds in FY97 and FY98 to procure additional quantities to allow fielding three years earlier than planned.

The SINGGARS system is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no DAE Approved Acquisition Program Baseline (dated August 18, 1993) breaches. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0 (ROC Approval)	DEC 74	N/A	DEC 74
ASARC I	OCT 75	N/A	OCT 75
Milestone I (DSARC I)	FEB 76	N/A	FEB 76
Award AD Contracts	APR 78	N/A	APR 78
Milestone IIIA	SEP 83	SEP 83	SEP 83
Complete DT/OT -- I/II	DEC 83	N/A	DEC 83
Complete Limited DT/OT	DEC 82	N/A	DEC 82
Complete Maturity DT/OT	DEC 83	N/A	DEC 83
Initial Ground (ITT) Production Contract Award	DEC 83	DEC 83	DEC 83
Initial Airborne Production Contract Award	N/A	MAY 85	MAY 85
JRMB - Level Program Review	N/A	DEC 86	DEC 86
Ground (ITT) FAT Complete	JUN 85	JAN 88	JAN 88
Ground (ITT) Production Delivery Begins	AUG 85	JAN 88	JAN 88
Airborne Option I Award	N/A	APR 88	APR 88
Ground (ITT) Option I Delivery Begins	N/A	MAY 88	MAY 88
Initial Ground (GD) Award	N/A	JUL 88	JUL 88
Airborne FAT Complete	N/A	SEP 88	SEP 88
Airborne Production Delivery Begins	N/A	NOV 88	NOV 88
ICOM EUT&E	N/A	NOV 88	NOV 88

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IIIB -- ITT Full Rate Production (Non-ICOM)	N/A	MAR 89	MAR 89
Airborne Option 2 Award	N/A	APR 89	APR 89
Ground (ITT) Option 3 Award	N/A	JUN 89	JUN 89
Ground (ITT) Option 2 Delivery Begins	N/A	JUN 89	JUN 89
Airborne Option 1 Delivery Begins	N/A	AUG 89	AUG 89
Airborne Option 2 Delivery Begins	N/A	APR 90	APR 90
ICOM IOT&E (ITT)	N/A	JUN 90	JUN 90
Ground (ITT) Option 3 Delivery Begins	N/A	JUL 90	JUL 90
Milestone IIIB -- ITT Full Rate (ICOM) and GD Low Rate Option I	N/A	DEC 90	DEC 90
Ground (ITT) Option 4 Award	N/A	DEC 90	DEC 90
IOC (1st Div Equipped)	OCT 87	DEC 90	DEC 90
Airborne Option 3 Award	N/A	DEC 90	JAN 91
Ground (GD) Option 1 Award	N/A	DEC 90	MAR 91
Ground (GD) FAT Complete	N/A	DEC 91	JUN 92
Airborne Option 3 Delivery Begins	N/A	JAN 92	JAN 92
Ground (ITT) Option 4 Delivery Begins	N/A	JAN 92	JAN 92
Ground (GD) Production Delivery Begins	N/A	FEB 92	JUL 92
Ground (GD) Option 2 Award	N/A	JUN 92	NOV 92
Ground (GD) Option 1 Delivery Begins	N/A	DEC 92	DEC 92
ICOM FOT&E (GD)	N/A	FEB 93	FEB 93
ITT Sole-Source (Basic) Award	N/A	MAR 92	MAR 92
ITT Sole-Source (Basic) Delivery Begins	N/A	JUN 93	JUN 93
Second Source (GD) Full Rate Production Program Review	N/A	JUN 93	AUG 93
Organic Support Capability (ITT ICOM)	N/A	FEB 92	FEB 92
Depot Support Capability	N/A	N/A	N/A
ITT	N/A	FEB 92	FEB 92
GD	N/A	MAR 94	MAR 94
ITT Sole-Source (Option) Award	N/A	MAR 93	MAR 93
Ground (GD) Option 3 Award	N/A	JUN 93	AUG 93
Organic Support Capability (GD ICOM)	N/A	JUL 93	JUL 93
Ground (GD) Option 2 Delivery Begins	N/A	NOV 93	NOV 93
ITT Competitive (Basic) Award	N/A	MAR 94	APR 94
GD Competitive (Basic) Award	N/A	MAR 94	APR 94
ITT Sole-Source (Option) Delivery Begins	N/A	JUN 94	JUN 94
Ground (GD) Option 3 Delivery Begins	N/A	OCT 94	OCT 94

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
ITT Competitive (Basic) Delivery Begins	N/A	JUN 95	JUN 95
GD Competitive (Basic) Delivery Begins	N/A	NOV 95	NOV 95

b. Previous Change Explanations --

Late start of ITT First Article Test (FAT) plus problems encountered during the first phase of testing resulted in revisions to FAT completion, First Production Deliveries, Third Option award and Initial Operational Capability (IOC) in accordance with the schedule presented at the Dec 86 Joint Requirements and Management Board (JRMB) review. A contract rebaselining modification signed in Nov 87 revised hardware delivery schedules and resulted in the IOC being rescheduled from Dec 89 to Dec 90. A Jun 89 DAE Acquisition Decision Memorandum (ADM) capped deliveries of ICOM RT's at 730 per month until completion of additional operational testing and resulted in the rescheduling of the ITT ICOM Initial Operational Test & Evaluation (IOT&E). A required Follow-on Experiment (FOEX) on the ITT radio completed in Oct 90 required additional time for reporting and certification causing the rescheduling of the Milestone IIIB (ITT) Full-rate (ICOM) from Sep 90 to Dec 90. ITT Airborne Option 3 award was delayed from Nov 90 to Jan 91 due to the requirement for extended negotiations as the result of the government's decision to reduce the scope of work. Development of a new COMSEC chip for the GD radio and delays in the completion of contractor testing in preparation for First Article Test resulted in the rescheduling of all subsequent GD schedule milestones. Reliability problems and delay in delivery of test hardware resulted in a program decision to postpone start of GD's IOT&E (formerly FOTE) from May 91 to Jan 92. GD FAT Complete schedule was revised from Mar 92 to Jun 92 to permit additional Production Reliability Acceptance Testing (PRAT). Resulting from the requirement to conduct a Confidence Verification Experiment on the GD radio, the ICOM IOT&E schedule was revised from Jan 92 to Feb 93. GD full-rate production program review and the option 3 award were delayed from Jun 93 to Aug 93 resulting from the lengthy review and approval process for the revised SINGARS acquisition strategy. ITT Competitive (Basic) Award and GD Competitive (Basic) Award were delayed from Mar 94 to Apr 94 to permit briefings to DA and OSD advising of the results of best value determinations and the resulting percentages of the total buy awarded to each contractor.

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9c. Schedule (Cont'd):

c. Current Change Explanations -- None

d. References --

Production Estimate:

Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:

DAE Approved Acquisition Program Baseline dated August 18, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Frequency Band (MHz)	30 - 87.975	30 - 87.975	/ 30 - 87.975	30 - 87.975	30 - 87.975
Number of Channels	2320	2320	/ 2320	2320	2320
Channel Spacing (KHz)	25	25	/ 25	25	25
Weight (Manpack + ICOM (lbs))	22.5	22.5	/ 22.5	18.8	22.5
Power Requirements (Vdc)	28	28	/ 28	28	28
Communications Range: (KM)					
(Voice & Analog Data)					
Manpack (above 40 MHz)	8	8	/ 8	8	8
Vehicular	35	35	/ 35	35	35
Airborne (@ 1000 ft)	N/A	35	/ 35	60	35
(Data @ 16 kbps @ 10 ⁻³ Ber)					
Manpack (above 40 MHz)	4.5	4	/ 4	4	4
Vehicular	17.5	17	/ 17	27	17
Mean Time Between Failure Operational Environment (MTBFOE) (Hrs)					
Ground					
Non-ICOM (less ECCM, DRA)	N/A	1250	/ 1250	7588	1250
ICOM	N/A	1250	/ 1250	8382	1250

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Airborne	750	750	/ 750	7345	750
ECCM (Hrs)	3500	N/A	/ N/A	8382	3500
Mean Time To Repair (MTTR) (Min)					
Organizational Level	15	15	/ 15	2.9	15
Direct Support (DS)					
Non-ICOM	N/A	60	/ 60	52.2	45/60
ICOM	N/A	45	/ 45	16	45
General Support (GS) (Hrs)	2	N/A	/ N/A	1.78	2

PERFORMANCE CHARACTERISTICS AS DISPLAYED ARE SUBJECT TO THE FOLLOWING CONDITIONS:

- a. Data for specified performance characteristics demonstrated performance on production models is available from First Article Test and Follow-on Evaluations including operational testing.
- b. Performance characteristic parameters are point values not ranges.
- c. Measurement conditions for Communications Range: rolling plains, antenna not buried in foliage, average soil conditions, 10⁴ bit error rate (ber).
- d. Since Manpack and Vehicular have the same value for MTBF, they have been combined and designated as Ground.
- e. The SINCGARS reliability requirement as approved in 1974 has no MTBF requirement or DCP threshold. This means that only radio hardware failures are counted, but under field test rather than in a lab. Demonstrated performance results are expressed on a point estimate basis on the AN/VRC-90 or 1477A airborne R/T system basis.
- f. Direct support Mean Time to Repair (MTTR) is not a cumulative requirement and does not include Organizational Level MTTR.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

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10d. Performance Characteristics (Cont'd):

Approved Program:

DAE Approved Acquisition Program Baseline dated August 18, 1993.

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

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	154.4	220.2	209.1
Procurement	4013.3	3089.8	2615.8
Major System Equipment	(3151.8)		(2335.6)
Ancillary Equipment	(431.8)		(119.0)
Total Flyaway	(3583.6)		(2454.6)
Total Other Weapon Systems	(25.9)		(142.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(403.8)		(18.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 84 Base-Year \$	4167.7	3310.0	2824.9
 Escalation	 1444.0	 1312.6	 981.3
Development (RDT&E)	(-19.0)	(4.5)	(2.8)
Procurement	(1463.0)	(1308.1)	(978.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	5611.7	4622.6	3806.2
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>292853</u>	<u>246845</u>	<u>255872</u>
Total	292853	246845	255872

Note: Excludes 123 RDTE prototypes from the SAR Baseline and 123 from the Current Estimate that are not considered fully configured.

The unit of measure is the Receiver-Transmitter, the major component contained in the ground and airborne radio.

c. Foreign Military Sales/International Cooperative Programs --

Recipient Country	Case ID	Quantity	*Estimated Cost
-------------------	---------	----------	-----------------

Bahrain	BA-B-JAT/JAH	73	1.2M
Finland	FI-B-YBG	6	.1M
SANG	SI-B-JBP	3,370	88.0M
SANG	SI-B-WFW	501	6.3M
SDAF	N/A	318	6.7M
Spain	SP-N-LDE	4	.1M

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

Kuwait (Army)	KU-B-JAT	575	7.6M
Kuwait (AF)	KU-B-UGO	40	.5M
Hellenic Republic	GR-B-JAX	128	1.6M
Bahrain	BA-B-JBO	6	.1M
SHAPE Tech Ctr	A2-B-UBB	3	.03M

* Estimated cost includes Total Package Fielding services/supplies

d. Nuclear Costs -- None.

e. References --

Production Estimate:

Draft Decision Coordinating Paper (DCP) #156, dated September 1983 for the Single Channel Ground and Airborne Radio System.

Approved Program:

DAE Approved Acquisition Program Baseline dated August 18, 1993.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (AUG 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY84\$)	2824.5	3310.0	
(2) Quantity	255872	246845	
(3) Unit Cost	0.011	0.013	-17.68
b. Procurement			
(1) Cost (BY84\$)	2615.8	3089.8	
(2) Quantity	255872	246845	
(3) Unit Cost	0.010	0.013	-18.33

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13. Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	135.4	5476.3	0.0	5611.7
Previous Changes:				
Economic	+1.1	+58.4	-	+59.5
Quantity	+11.6	-966.4	-	-954.8
Schedule	+2.2	+772.1	-	+774.3
Engineering	+46.4	-	-	+46.4
Estimating	+16.1	-1069.3	-	-1053.2
Other	-	-	-	-
Support	-	-295.6	-	-295.6
Subtotal	+77.4	-1500.8	-	-1423.4
Current Changes:				
Economic	-0.5	-126.3	-	-126.8
Quantity	-	20.9	-	+20.9
Schedule	-	-29.7	-	-29.7
Engineering	-	-	-	-
Estimating	-0.4	-209.2	-	-209.6
Other	-	-	-	-
Support	-	-36.9	-	-36.9
Subtotal	-0.9	-381.2	-	-382.1
Total Changes	+76.5	-1882.0	-	-1805.5
Current Estimate	211.9	3594.3	-	3806.2

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

a. Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	154.4	4013.3	0.0	4167.7
Previous Changes:				
Quantity	+9.7	-466.8	-	-457.1
Schedule	-	+43.9	-	+43.9
Engineering	+35.0	-	-	+35.0
Estimating	+10.3	-554.8	-	-544.5
Other	-	-	-	-
Support	-	-248.3	-	-248.3
Subtotal	+55.0	-1226.0	-	-1171.0
Current Changes:				
Quantity	-	14.0	-	+14.0
Schedule	-	-2.4	-	-2.4
Engineering	-	-	-	-
Estimating	-0.3	-162.9	-	-163.2
Other	-	-	-	-
Support	-	-20.2	-	-20.2
Subtotal	-0.3	-171.5	-	-171.8
Total Changes	+54.7	-1397.5	-	-1342.8
Current Estimate	209.1	2615.8	-	2824.9

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Addition of 45 prototypes for Integrated COMSEC (ICOM).

Schedule: Rescheduled effort due to funding constraints.

Engineering: Redesign radio and COMSEC device for Integrated COMSEC. Increased scope of work for P3I effort.

Estimating: Revised estimate for ICOM effort and Installation Kit (IK), SINGGARS Remote Control Unit (SRCU), and Second Source Test Program Set (TPS) development. Revised estimate for P3I cost studies. Removal of out year funding designated for SINGGARS follow-on system. Adjustments of prior year amounts to

SINGGARS, December 31, 1995

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

actuals. Current and prior year inflation offset.

Procurement

Economic: Revised escalation indices.

Quantity: Quantity adjustment due to Force Structure change. Adjustment due to including/changing other service requirements.

Schedule: Schedule slip resulting from problems during First Article Testing. Cost reduction caused by shortened schedule due to increased annual buys. ICOM deliveries capped until operational testing completed; costs to revise and extend contract delivery schedule for balance of program. Change in annual procurement buy profile.

Estimating: Revised estimates for warranty, COMSEC module, installation kits, Battlefield Electronic Communications Systems (BECS), KGV-10, SINGGARS Remote Control Unit (SRCU), and Airborne ICOM production. Revised estimate for ground radios based on other service quantity buys and impact on learning curve calculations. Reduced hardware costs realized by applying learning curve through end of production versus only a specified quantity. Revised estimate for ground radio based on changes in procurement mix of ITT and GD radios. Additional installation kits for POMCUS. Revised estimate based on economies expected from first and second source competition. Current and prior year inflation offset.

Support: Revised requirement for radio spares, reclassification of initial spares from procurement to Army Stock Fund, elimination of spares requirement for KGV-10 and reduced estimate for data. Increased estimate for ground radio initial spares based on revised methodology (cost per operating hour). Addition of costs for Total Package Fielding (TPF) and New Equipment Training (NET). Addition of costs for Project Management Office salaries, Contractor Field Service Representatives, and Information Management.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.3
Estimating change resulting from refinement of program estimate. (Estimating)	-0.5	-0.7
	<hr/>	<hr/>
RDT&E Subtotal	-0.3	-0.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-92.5
Economic adjustment for negative program change. (Economic)	N/A	-33.8
Adjustment for Current and Prior Inflation (Estimating)	+25.8	+34.7
Total variance associated with increase of 1046 units, from 254,826 to 255,872.	+164.6	+252.1
Active Army requirement increased by 3351 from 201,273 to 204,624 radios. (Quantity)	+45.1	+69.6
Special requirements for Army National Guard and Army Reserves increased by 1076 from 11,577 to 12,653 radios. (Quantity)	+14.4	+21.9
Marine Corps requirement decreased by 1667 from 34,422 to 32,755 radios. (Quantity)	-22.4	-34.4
Air Force requirement decreased by 529 from 2678 to 2149 radios. (Quantity)	-7.2	-10.7
Navy requirements decreased by 1185 from 4726 to 3541 radios. (Quantity)	-15.9	-25.5
Allocation to Schedule variance associated with quantity change. (Schedule)	-2.4	-2.6
Allocation to Estimating variance associated with quantity change. (Estimating)	+153.2	+233.7
Acceleration of annual procurement buy profile. (Schedule)	--	-27.1

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate due to funding constraints. (Estimating)	-341.9	-477.6
Adjustment for Current and Prior Inflation. (Support)	+1.6	+2.1
Revised estimate for reduced Initial Spares requirement. (Support)	-8.9	-13.9
Revised Estimate for reduced Other Weapon Systems requirement. (Support)	-12.9	-25.1
Procurement Subtotal	<u>-171.5</u>	<u>-381.2</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.019	--	-0.001	0.003	--	-0.005	--	-0.001	-0.004	0.015

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

a. Procurement --			Initial Contract Price		
<u>SINGGARS SECOND SOURCE:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GENERAL DYNAMICS, TALLAHASSEE, FLORIDA, CA			\$21.9	N/A	400
DAAB07-88-C-T026, FPAF					
Award: July 15, 1988					
Definitized: July 15, 1988					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$177.4	N/A	22440	\$316.2	\$316.2	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date			<u>N/A</u>	<u>N/A</u>	
Net Change			\$0.0	\$0.0	

Explanation of Change:

The target price increase of \$20.2M from the December 1994 SAR is

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15. Contract Information (Cont'd):

due to the award of earned reliability award fees. The contractor's estimate at completion includes their reported loss of \$100+M over the contract period.

This will be the last time this contract will appear in the SAR. Authority - 90% complete.

Cost and schedule variance reporting not required for this FPAF contract.

<u>SINGGARS GROUND PROD:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
ITT CORPORATION, FORT WAYNE, IN	\$224.7	N/A	16000	
DAAB07-92-C-G004, FPAF				
Award: March 10, 1992				
Definitized: April 30, 1992				
Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$403.3	N/A	33565	\$403.3	\$403.3
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date			N/A	N/A
Net Change			<u>N/A</u>	<u>N/A</u>
			\$0.0	\$0.0

Explanation of Change:

The target price increase of \$5.6M from the December 1994 SAR is due to the incorporation of modifications for procurement of additional Control Monitors and award of earned reliability award fees.

This will be the last time this contract will appear in the SAR. Authority - 90% complete.

Cost and schedule variance reporting not required for this FPAF contract.

<u>SINGGARS GROUND PROD PY5:</u>			Initial Contract Price	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
GENERAL DYNAMICS, TALLAHASSEE, FL	\$116.0	N/A	11369	
DAAB07-94-C-C402, FPAF				
Award: April 29, 1994				
Definitized: April 29, 1994				

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15. Contract Information (Cont'd):

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$134.4	N/A	11369	\$134.4	\$140.3
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date			<u>N/A</u>	<u>N/A</u>
Net Change			\$0.0	\$0.0

Explanation of Change:

The target price increase of \$18.4M from the December 1994 SAR is due to the incorporation of modifications for pre-pilot receiver/transmitter assembly and test, procurement of unique tool kits, and procurement of additional spares. The contractor's EAC does not include reliability award fee yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
<u>SINGARS GROUND PROD FY8:</u>			
ITT CORPORATION, FORT WAYNE, IN			
DAAB07-94-C-C401, FPAF	\$127.2	N/A	17053
Award: April 29, 1994			
Definitized: April 29, 1994			

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$128.9	N/A	17053	\$128.9	\$137.5
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date			<u>N/A</u>	<u>N/A</u>
Net Change			\$0.0	\$0.0

Explanation of Change:

The target price increase of \$1.7M from the December 1994 SAR is due to incorporation of modification to procure additional spares. The contractor's EAC does not include reliability award fee yet to be earned.

Cost and schedule variance reporting not required for this FPAF contract.

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15. Contract Information (Cont'd):

<p><u>SINGGARS GROUND PROD PY9:</u> ITT CORPORATION, FORT WAYNE, IN DAAB07-95-C-C503, FPAF Award: March 31, 1995 Definitized: March 31, 1995</p>	<table border="0"> <tr> <th colspan="3" style="text-align: center;">Initial Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$145.8</td> <td>N/A</td> <td>18601</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$145.8	N/A	18601
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$145.8	N/A	18601								

<table border="0"> <tr> <th colspan="3" style="text-align: center;">Current Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$161.2</td> <td>N/A</td> <td>18601</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$161.2	N/A	18601	<table border="0"> <tr> <th colspan="2" style="text-align: center;">Estimated Price At Completion</th> </tr> <tr> <th style="text-align: left;"><u>Contractor</u></th> <th style="text-align: left;"><u>Program Manager</u></th> </tr> <tr> <td>\$161.2</td> <td>\$170.5</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$161.2	\$170.5
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$161.2	N/A	18601														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$161.2	\$170.5															

<p>Previous Cumulative Variances Cumulative Variances To Date Net Change</p>	<table border="0"> <tr> <th style="text-align: center;"><u>Cost Variance</u></th> <th style="text-align: center;"><u>Schedule Variance</u></th> </tr> <tr> <td style="text-align: center;">N/A</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td style="text-align: center;"><u>N/A</u></td> <td style="text-align: center;"><u>N/A</u></td> </tr> <tr> <td style="text-align: center;">\$0.0</td> <td style="text-align: center;">\$0.0</td> </tr> </table>	<u>Cost Variance</u>	<u>Schedule Variance</u>	N/A	N/A	<u>N/A</u>	<u>N/A</u>	\$0.0	\$0.0
<u>Cost Variance</u>	<u>Schedule Variance</u>								
N/A	N/A								
<u>N/A</u>	<u>N/A</u>								
\$0.0	\$0.0								

Explanation of Change:

The is the first time this contract appears in the SAR.

The contractor's EAC does not include reliability award fee yet to be earned.

Cost and schedule variance reporting not required for the FPAF contract.

<p><u>SINGGARS GROUND PROD PY6:</u> GENERAL DYNAMICS, TALLAHASSEE, FL DAAB07-95-C-C502, FPAF Award: March 31, 1995 Definitized: March 31, 1995</p>	<table border="0"> <tr> <th colspan="3" style="text-align: center;">Initial Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$128.5</td> <td>N/A</td> <td>15219</td> </tr> </table>	Initial Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$128.5	N/A	15219
Initial Contract Price										
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>								
\$128.5	N/A	15219								

<table border="0"> <tr> <th colspan="3" style="text-align: center;">Current Contract Price</th> </tr> <tr> <th style="text-align: left;"><u>Target</u></th> <th style="text-align: left;"><u>Ceiling</u></th> <th style="text-align: left;"><u>Qty</u></th> </tr> <tr> <td>\$128.5</td> <td>N/A</td> <td>15219</td> </tr> </table>	Current Contract Price			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	\$128.5	N/A	15219	<table border="0"> <tr> <th colspan="2" style="text-align: center;">Estimated Price At Completion</th> </tr> <tr> <th style="text-align: left;"><u>Contractor</u></th> <th style="text-align: left;"><u>Program Manager</u></th> </tr> <tr> <td>\$128.5</td> <td>\$136.1</td> </tr> </table>	Estimated Price At Completion		<u>Contractor</u>	<u>Program Manager</u>	\$128.5	\$136.1
Current Contract Price																
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>														
\$128.5	N/A	15219														
Estimated Price At Completion																
<u>Contractor</u>	<u>Program Manager</u>															
\$128.5	\$136.1															

<p>Previous Cumulative Variances Cumulative Variances To Date Net Change</p>	<table border="0"> <tr> <th style="text-align: center;"><u>Cost Variance</u></th> <th style="text-align: center;"><u>Schedule Variance</u></th> </tr> <tr> <td style="text-align: center;">N/A</td> <td style="text-align: center;">N/A</td> </tr> <tr> <td style="text-align: center;"><u>N/A</u></td> <td style="text-align: center;"><u>N/A</u></td> </tr> <tr> <td style="text-align: center;">\$0.0</td> <td style="text-align: center;">\$0.0</td> </tr> </table>	<u>Cost Variance</u>	<u>Schedule Variance</u>	N/A	N/A	<u>N/A</u>	<u>N/A</u>	\$0.0	\$0.0
<u>Cost Variance</u>	<u>Schedule Variance</u>								
N/A	N/A								
<u>N/A</u>	<u>N/A</u>								
\$0.0	\$0.0								

Explanation of Change:

This is the first time this contract appears in the SAR.

The contractor's EAC does not include reliability awarded fee yet to

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15. Contract Information (Cont'd):
be earned.

Cost and schedule variance reporting not required for the FPAF contract.

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

a. Program Status --

- (1) Percent Program Completed: 84.0% (21 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 82.1% (\$3124.3 / \$3806.2)

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

<u>Appropriation</u>	<u>Prior Years</u> (FY76-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2000)	<u>Total</u>
RDT&E	197.7	7.2	7.0	-	211.9
Procurement	2526.9	392.5	345.4	329.5	3594.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2724.6	399.7	352.4	329.5	3806.2

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY84 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1976				0.7	0.4	0.4	0.4	7.4
1977				0.3	0.2	0.2	0.2	1.6
1977				3.2	2.0	2.0	2.0	6.4

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1978				9.2	6.2	6.2	6.2	7.0
1979				16.6	12.4	12.4	12.4	9.3
1980				24.4	20.0	20.0	20.0	10.6
1981				27.3	24.4	24.4	24.4	10.6
1982				13.9	13.2	13.2	13.2	7.6
1983				12.0	11.8	11.8	11.8	4.0
1984				10.1	10.3	10.3	10.3	3.8
1985				9.9	10.4	10.4	10.4	3.4
1986				11.1	12.0	12.0	12.0	2.8
1987				13.2	14.8	14.8	14.8	2.7
1988				14.2	16.5	16.5	16.5	3.0
1989				7.6	9.2	9.2	9.2	4.2
1990				10.2	12.8	12.8	12.8	4.1
1991				2.1	2.7	2.7	2.7	4.3
1992				1.3	1.7	1.7	1.7	3.0
1993				5.3	7.2	7.2	6.9	2.4
1994				3.9	5.4	5.4	5.3	2.0
1995				2.9	4.1	4.1	1.9	1.9

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1996				5.0	7.2	3.7	0.4	2.0
1997				4.7	7.0			2.2
Subtot				209.1	211.9	201.4	195.5	

Appropriation: 2031 Aircraft Procurement, Army

1985	150	4.3	10.6	17.5	19.0	19.0	19.0	3.4
Subtot	150	4.3	10.6	17.5	19.0	19.0	19.0	

OPA inflation indices were used since the Airborne radios are Communications-Electronics equipment. All requirements for the Airborne radio are funded in the OPA appropriation beginning in FY88.

Appropriation: 2035 Other Procurement, Army

1983	175	1.2	17.3	19.8	20.3	20.3	20.3	4.0
1984	1325	3.1	56.7	63.4	66.9	66.9	66.9	3.8
1985	10268	0.1	131.5	133.7	145.5	145.5	145.5	3.4
1986	400	0.4	76.8	76.5	85.6	85.6	85.6	2.8
1987				11.2	13.0	13.0	13.0	2.7
1988	720		29.1	26.7	32.2	32.2	32.2	3.0
1989	13599	3.1	155.4	179.2	225.6	225.6	225.6	4.2

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1990	2925	5.4	64.7	62.2	80.8	80.8	80.8	4.1
1991	15328	1.0	200.2	201.3	269.1	269.1	255.8	4.3
1992	16580	5.5	179.1	200.2	273.4	273.4	242.9	3.0
1993	18157	0.6	135.1	148.7	207.4	205.8	182.9	2.4
1994	20563	0.1	229.6	242.6	344.1	334.9	179.8	2.0
1995	23850	0.1	223.2	238.4	346.6	336.5	69.4	1.9
1996	28623	0.1	218.0	240.7	354.9	50.6	0.1	2.0
1997	26209	0.1	180.1	197.9	298.9			2.2
1998	25902	0.1	169.9	184.9	285.5			2.2
1999				10.0	15.8			2.3
2000				8.8	14.2			2.2
Subtot	204624	20.9	2066.7	2246.2	3079.8	2140.2	1600.8	
Army	204774	25.2	2077.3	2472.8	3310.7	2360.6	1815.3	

Appropriation: 1109 Procurement, Marine Corps

1989	2300		21.8	21.8	27.4	27.4	27.4	4.2
1990								4.1
1991								4.3

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1109 Procurement, Marine Corps (Cont'd)

1992	4100		38.4	38.4	52.4	52.4	36.9	3.0
1993	5450		37.6	37.6	52.5	52.5	22.1	2.4
1994	4539		32.5	32.5	46.1	38.0	18.2	2.0
1995	7100		36.2	36.2	52.6	51.8	0.7	1.9
1996	4456		21.4	21.4	31.6			2.0
1997	4810		23.1	23.1	34.9			2.2
Subtot	32755		211.0	211.0	297.5	222.1	105.3	

Appropriation: 1810 Other Procurement, Navy

1985	332		1.8	1.8	2.0	2.0	2.0	3.4
1986								2.8
1987								2.7
1988								3.0
1989	100		0.6	0.6	0.8	0.8	0.8	4.2
1990								4.1
1991	586		4.3	4.3	5.7	5.7	5.7	4.3
1992	378		2.9	2.9	4.0	4.0	3.9	3.0
1993	948		8.3	8.3	11.6	11.6	9.6	2.4

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1994	405		3.7	3.7	5.3	4.0	3.7	2.0
1995	221		1.5	1.5	2.2	2.1		1.9
1996	153		1.1	1.1	1.6			2.0
1997	113		1.1	1.1	1.6			2.2
1998	305		2.6	2.6	4.0			2.2
Subtot	3541		27.9	27.9	38.8	30.2	25.7	
Navy	36296		238.9	238.9	336.3	252.3	131.0	

Appropriation: 3080 Other Procurement, Air Force

1991	375		2.1	2.1	2.8	2.8	2.8	4.3
1992	974		5.6	5.6	7.7	7.7	7.2	3.0
1993	137		1.1	1.1	1.5	1.5	1.1	2.4
1994	485		4.1	4.1	5.8	5.8	2.3	2.0
1995	178		1.3	1.3	1.9	1.9		1.9
Subtot	2149		14.2	14.2	19.7	19.7	13.4	
USAF	2149		14.2	14.2	19.7	19.7	13.4	

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1991	1511		10.7	10.7	14.3	14.3	14.1	4.3
1992	2394		17.1	17.1	23.3	23.3	20.3	3.0
1993	4522		30.4	30.4	42.4	42.4	39.8	2.4
1994	3150		24.7	24.7	35.1	4.3	3.9	2.0
1995								1.9
1996	196		3.0	3.0	4.4			2.0
1997	440		6.6	6.6	10.0			2.2
1998	440		6.5	6.5	10.0			2.2
Subtot	12653		99.0	99.0	139.5	84.3	78.1	
DoD	12653		99.0	99.0	139.5	84.3	78.1	
Grand Total	255872	25.2	2429.4	2824.9	3806.2	2716.9	2037.8	

17. Production Rate Data:

a. Deliveries to Date --

RDT&E

Procurement

Plan/Actual

123/123

116710/117256

b. Approved Design-to-Cost Objective -- N/A.

SINGGARS, December 31, 1995

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

SINGGARS is the VHF-FM radio communication system which provides the primary means of command and control for infantry, artillery and armor units. Since SINGGARS will be fielded to every type of unit in the Army, there is no "typical" division set; however; 4,500 receiver-transmitters (RTs) are used as an average division quantity. Ninety-eight per cent of the total buy will be fielded; costs shown are based on fielded divisions. SINGGARS does not require a dedicated operator except for an average of 1200 retransmission operators needed for specific missions. Operating tempo (peacetime) varies depending on the theater in which the radio is deployed and ranges from 177 hours per year for Reserve Units to 1638 hours per year in Europe. No depot overhaul is scheduled. Operating and Maintenance (O&M) (consumable) repair parts includes batteries. Maintenance includes depot maintenance, civilian field maintenance labor, and interim contractor support. Other Operating and Support (O&S) costs include training, transportation, System/Project Management and other sustaining support costs. The operating life of SINGGARS is 20 years. No operating and support cost data are currently available for the antecedent system, AN/PRC-77 and AN/VRC-12 family of radios.

SINGGARS Program Life Cycle Cost Estimate validated April 5, 1993.

b. Costs -- (FY 1984 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Division (4500 RTs)	Avg Annual Cost Per (Antecedent)
O&M Repair Parts	2.6	N/A
Procurement Funded Mat'l	0.1	N/A
Maintenance	0.1	N/A
Military Personnel	0.9	N/A
Oth Operating & Support	0.1	N/A
Total	3.8	N/A

SINCGARS, December 31, 1995

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

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	2.7	---	---	---	2.7
Total	2.7	---	---	---	2.7

STANDARD MISSILE-2, December 31, 1995

5. (U) Related Programs:

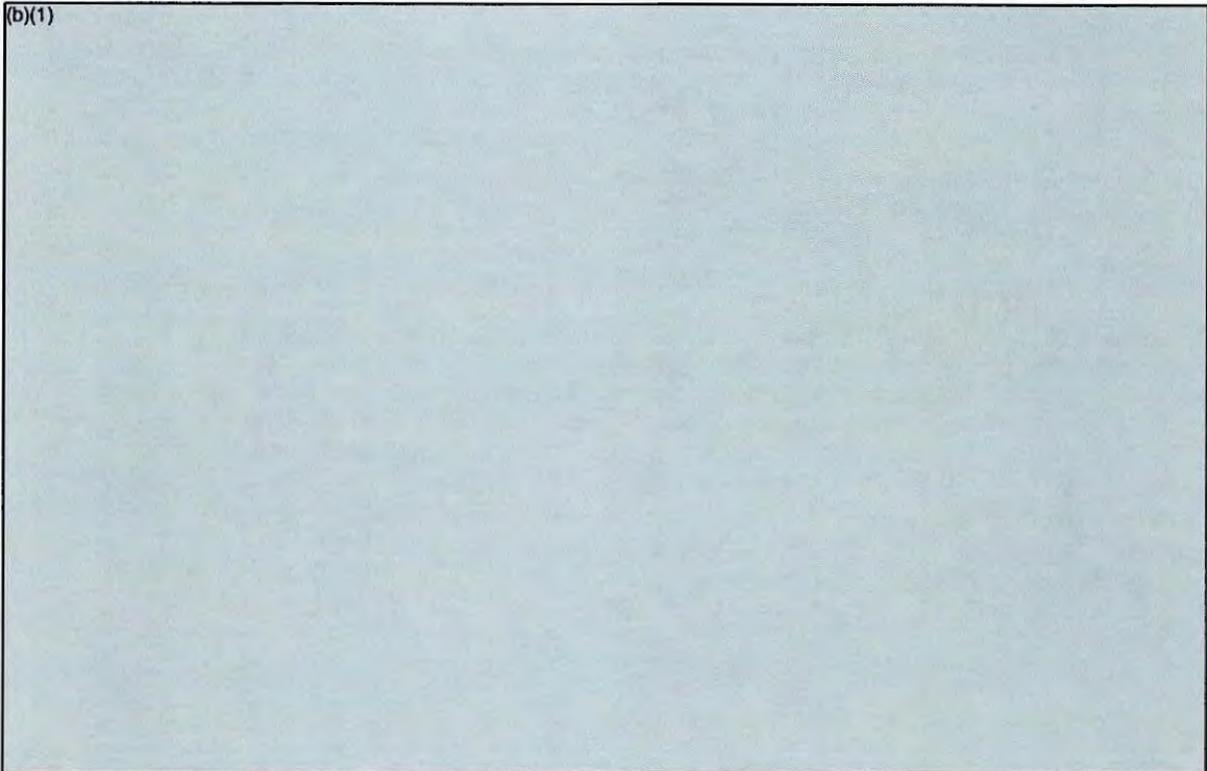
CG 47 AEGIS Cruiser, and DDG 51 AEGIS Destroyer Ship Classes, and TERRIER CG/NTU, TARTAR CGN/NTU, and Vertical Launch System.

(b)(1)



(U) Block II SM-2 is a variation of Block I SM-2. Block II Medium Range (MR) and Extended Range (ER) Missiles incorporate increased kinematics, new conventional warhead, improved fuzing, and improved guidance to provide enhanced capability against high flying, steep diving anti-ship missiles (ASMs). Due to the addition of a MK-104 Dual Thrust Rocket Motor, Block II MR missile range is double that of Block I MR missiles and approximates range of Block II ER missiles. The SM-2 Block II MR is deployed on TARTAR New Threat Upgrade ships and AEGIS CG-47/51 Cruisers and AEGIS DDG-51 Destroyers. The SM-2 Block II ER is deployed on all 31 TERRIER Guided Missile Cruisers and Destroyers.

(b)(1)



STANDARD MISSILE-2, December 31, 1995

(b)(1)

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

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. Based upon TECHEVAL and OPEVAL results the CNO recommended approval of limited production in May 1983. The Block II improvements are required to meet the Advanced Anti-Ship Missile (ASM) threats of the mid 1980s.

(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. Initial pilot production of 30 medium range rounds was approved for FY 83 in order to provide missiles for CSSQT and FOT&E testing in the CG 47 AEGIS Cruisers, the first medium range Block II ship. The Block II improvements are required to meet the Advanced Anti-Ship Missile (ASM) threats of the mid 1980s.

(U) The Milestone IIIC ARB was conducted 20 February 1985. On 8 June 1985, SECNAV approved limited production (Lot #3) for a FY 85 buy of 255 ER missiles and 529 MR missiles.

(U) The Milestone IIID Decision Memorandum was signed on 15 May 1986. SECNAV approved limited production for a FY 86 buy of 470 ER missiles and 846 MR missiles.

(U) The Milestone IIIE ARB was conducted October 1986 and the Navy Program Decision Meeting was held on 26 November 1986. As a result, the Approval for Full Production Decision Memorandum was signed 17 December 1986. Follower producer source selection of the GC&A was awarded to Raytheon Company on 6 June 1986. Second sources were selected for all STANDARD Missile components and all contracts were competitively bid in FY 88 except the MK 30 Sustainer which will remain single source due to small procurement quantities. Second sources selected for qualification were Raytheon (Guidance, Control, and Airframe); ATI (MK 115 Warhead Case); Bendix (Target Detecting Device); ARC (MK 104 Dual Thrust Rocket Motor); and Hercules (MK 70 Booster).

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STANDARD MISSILE-2, December 31, 1995

7a. (U) Program Highlights (Cont'd):

(U) The SM-2 MR and ER variants are no longer in production.

(U) Approval for production of the Block III was received 12 May 1988 by the Navy Acquisition Review Board.

(U) The Missile Homing Improvement Program (MHIP) was approved for Rapid Development Capability in January 1989.

(U) The Block III achieved IOC in August 1990. The Block IIIA completed OPEVAL in August 1991 with eleven out of twelve successful firings. The Block IIIA Production Readiness Review (PRR) process was completed in May 1991. The assembly of ordnance sections and integration into FTRs to support DT/OPEVAL Testing of the Block IIIA was initiated. The Block IIIB completed Technical Risk Assessment. A NPDM was held on 6 June 1991. This resulted in a restructure of the program and approved a new program baseline. In October/November 1990 five successful static firings of the Block IV Booster were completed. The Block IV restrained firing in a MK41 VLS was completed.

(U) General Dynamics Air Defense Systems, Pomona, CA was acquired by Hughes Missile Systems Company (HMSC) and is in the process of moving to Tucson, AZ. The Block IIIA production contract was awarded in January 1992. A Block IIIA Pre-production missile was flown successfully in January 1993 against an AEGIS Special Evaluation Test Target.

(U) A new Acquisition Program Baseline (APB) was approved for the SM-2 Block I/II/III/A/B on 10 December 1993, and for the SM-2 Block IV on 22 February 1994. HMSC's move to Tucson was completed, and the first AUR was delivered from the facility in August 1993. The Navy received funding from the Ballistic Missile Defense Organization (BMDO) to investigate the feasibility of the SM-2 in the TBMD role. The SM-2 Block IIIA achieved IOC in January, 1994 with the missile loadout of USS Vicksburg (CG 69).

(U) The new SM-2 Block IIIB TEMP was approved by OUSD(A&T) on 26 April 1994. A new APB for the SM-2 Block I/II/III/A/B was approved on 28 June 1994. On 21 October 1994, the first fully successful test flight of the SM-2 Block IIIB occurred. In July, 1994 the first at-sea firings of SM-2 Block IV were conducted, with 4 of the 5 flights successful. The unsuccessful mission was repeated on October 5, 1994 and was an unqualified success. The new TEMP for the SM-2 Block IV was approved by OUSD(A&T) on 2 August 1994. The SM-2 Block IV GTV series was completed in November, 1994 with 7 of 8 flights successful. DT/IOT&E was completed for SM-2 Block IV onboard USS Lake Erie (CG 70) with 4 of 6 flights successful on 6

- 4 -

*** UNCLASSIFIED ***

STANDARD MISSILE-2, December 31, 1995

7a. (U) Program Highlights (Cont'd):

October 1994. COMOPTEVFOR has concluded based on the DT/IOT&E findings that the SM-2 Block IV is potentially operationally effective and potentially operationally suitable and recommended proceeding to Low Rate Initial Production (LRIP). The SM-2 Block IV ARB was held on 9 January 1995 and the program was certified to proceed to the NPDM.

The SM-2 Block IIIB completed its initial phase of flight testing at WSMR, with the successful intercept of a Vandal target simulating prime threat on 15 June 1995. A new APB for the SM-2 Block IV was approved on 4 May 1995. The SM-2 Block IV received DAB approval for LRIP on 1 May 1995.

b. (U) Significant Developments Since Last Report --
The SM-2 Block IIIB received approval to proceed to LRIP on 16 October 1995. A new APB for the SM-2 Block I/II/III/A/B was approved on 31 October 1995. The ADM was signed on 20 November 1995. The at-sea DT for the SM-2 Block IIIB was successfully completed on 8 December. This system will satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There is a cost breach to the SM-2 Block I/II/III/A/B APB dated 31 October 1995. There is a Nunn-McCurdy Unit Cost Breach, a cost breach and a schedule breach to the SM-2 Block IV APB dated 4 May 1994.

9. (U) Schedule:

SM-2 BLK I\II\III\A\B

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
BLOCK II MR			
First Flt Test (development test)	FEB 83	FEB 83	FEB 83
Pilot Production Approved	JUN 83	JUN 83	JUN 83
Lot 1 Approval for Limited Prod	FEB 84	FEB 84	FEB 84
DT/OT and OPEVAL	SEP 84	SEP 84	SEP 84
Lot 2 Approval for Limited Prod	JUN 85	JUN 85	JUN 85
FOT&E USS VINCENNES CG-49	NOV 85	NOV 85	MAY 86
Lot 3 ALP	APR 86	APR 86	MAY 86
Milestone IIIIE(AFP)	DEC 84	DEC 86	DEC 86
FOT&E Vertical Launch Cruiser CG 54	DEC 86	N/A	APR 88
USS Antietam (Blk II MR)			

STANDARD MISSILE-2, December 31, 1995

9a. (U) Schedule (Cont'd):
SM-2 BLK I\II\III\A\B

(U) Milestones (Cont'd) --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
BLOCK II ER			
OPEVAL Complete	MAR 83	MAR 83	MAR 83
Pilot Production Approved	APR 82	APR 82	APR 82
Lot 1 Approval for Limited Production	JUN 83	JUN 83	JUN 83
Lot 2 Approval for Limited Production	FEB 84	FEB 84	FEB 84
Lot 3 Approval for Limited Production	MAR 85	MAR 85	MAR 85
FOT&E USS MAHAN DDG 42	MAR 85	MAR 85	MAR 85
Lot 4 Approval for Limited Production	APR 86	APR 86	MAY 86
Milestone III E (AFP)	DEC 84	DEC 84	DEC 86
FOT&E USS Scott DDG 995 (Blk II ER)	DEC 86	N/A	DEC 89
BLOCK III			
Milestone II	JUN 85	JUN 85	JUN 85
Prelim Design Review	JUN 85	JUN 85	JUN 85
Critical Design Review	JUN 86	JUN 86	JUN 86
Developmental Test			
Start	SEP 87	SEP 87	SEP 87
Complete	JUN 88	JUN 88	JUN 88
Release to Production	JUN 88	JUN 88	JUN 88
IOC	SEP 90	SEP 90	AUG 90
BLOCK IIIA			
Milestone II	JUN 85	JUN 85	JUN 85
Prelim Design Review	DEC 87	DEC 87	DEC 87
Critical Design Review	MAR 90	MAR 90	MAR 90
Developmental Test	JUN 91	JUN 91	JUN 91
Operational Test	JUN 91	JUN 91	AUG 91
Milestone III	SEP 91	SEP 91	FEB 92
IOC	SEP 93	SEP 93	JAN 94
BLOCK IIIB			
Milestone II	JUN 89	JUN 89	JUN 89
Prelim Design Review	SEP 89	SEP 89	SEP 89
Critical Design Review	JUN 91	FEB 92	MAR 92
Milestone IIIA	SEP 91	N/A	N/A
LRIP Program Decision	N/A	OCT 95	OCT 95
Developmental Test (WSMR)	DEC 91	DEC 93	JUN 94
ARB (Kit Release)	SEP 92	N/A	N/A
Developmental Test (at Sea)	MAR 93	DEC 95	DEC 95

(b)(1)



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9b. (U) Schedule (Cont'd):
SM-2 BLK I\II\III\A\B

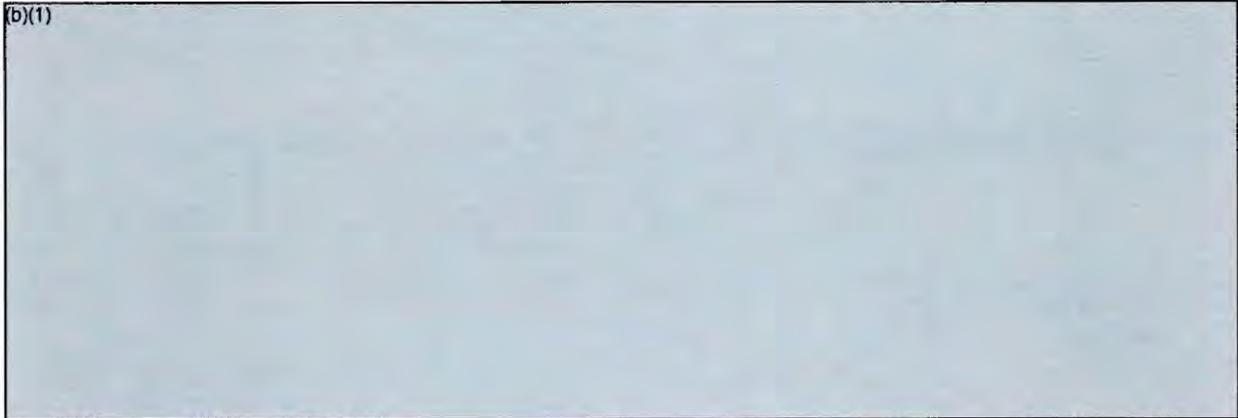
b. (U) Previous Change Explanations --

SM-2 BLOCK II MR/ER

FOT&E for SM-2 MR on the USS Vincennes (CG 49) slipped from November 85 to May 86 due to ship availability. Lot 3 ALP slipped from April to May 86 due to ASN Scheduling. ARB was rescheduled to October 86 and NPDM was completed in December 86 causing Milestone IIIIE (AFP) to slip from December 84 to December 86.

SM-2 BLOCKS III/IIIA/IIIB

(b)(1)



c. (U) Current Change Explanations --

(b)(1)



d. (U) References --

(U) Production Estimate:

SM-2 Block II Milestone IIIIE NPDM of 17 December 1986. Block III Milestone IIIB NAVY ARB of 12 May 1988.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 31, 1995.

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9d. (U) Schedule (Cont'd):
SM-2 BLK IV

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	AUG 86	AUG 86	AUG 86
FSED Contract	JUL 87	JUL 87	JUL 87
Preliminary Design Review	DEC 88	DEC 88	DEC 88
Critical Design Review	JUL 89	AUG 89	AUG 89
Development Test	NOV 90	MAY 94	JUL 94
Milestone IIIA (NPDM) Pilot Production	DEC 90	N/A	N/A
Operational Test	SEP 91	JUL 94	OCT 94
Milestone IIIB (Full Production)	DEC 91	N/A	N/A

(b)(1)

Note: At the LRIP Program Decision quantities of 106 were approved with provision for more LRIP quantities should the program not transition to the SM-2 Block IVA as planned. Due to delays in the Navy Area TBMD program, an additional 54 units and 2 years have been added.

b. (U) Previous Change Explanations --

IOC for the SM-2 Block IV slipped 24 months due to program restructuring caused by technical problems. Test delays caused by further hardware technical problems caused a slip in IOC of 13 months. Schedule for Development Test, OPEVAL, MSIII, First Production Delivery and IOC slipped due to flight test delays arising from hardware technical problems. DT, OT, MS III, First Production Delivery, and IOC again slipped due to a delay in the flight test schedules caused by further hardware technical issues. Milestone IIIA and Milestone IIIB were replaced by LRIP Program Decision and Milestone III (Full Production). Delays in the approval of the STANDARD Missile Acquisition Strategy caused First Production Delivery and IOC to slip 3 months.

c. (U) Current Change Explanations --

(b)(1)

STANDARD MISSILE-2, December 31, 1995

9d. (U) Schedule (Cont'd):
SM-2 BLK IV

d. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated November 20, 1990.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 04, 1995.

10. (U) Performance Characteristics:

SM-2 BLK I\II\III\A\B

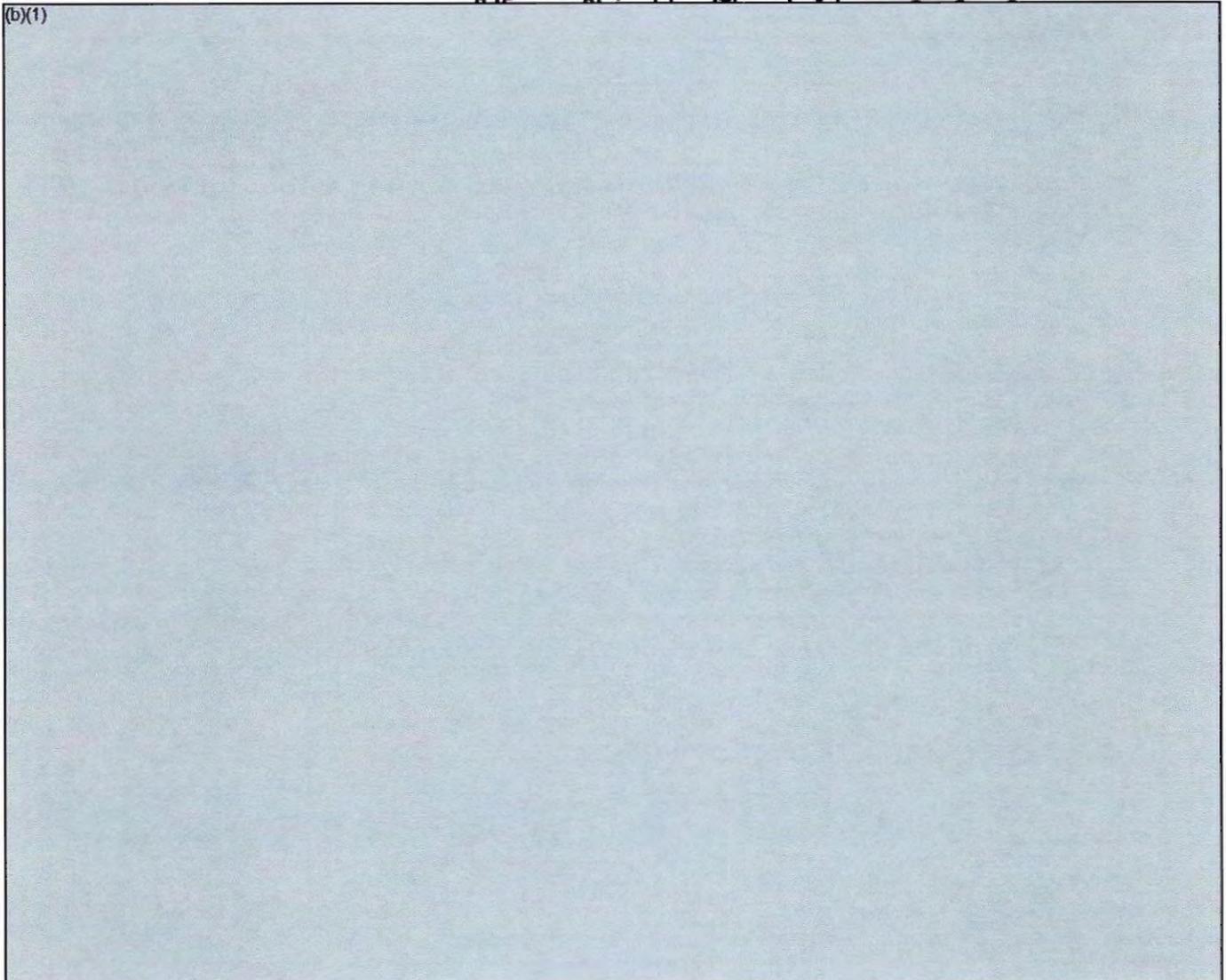
a. (U) Performance --

Approved
Program

Demon-
strated

Current

(b)(1)



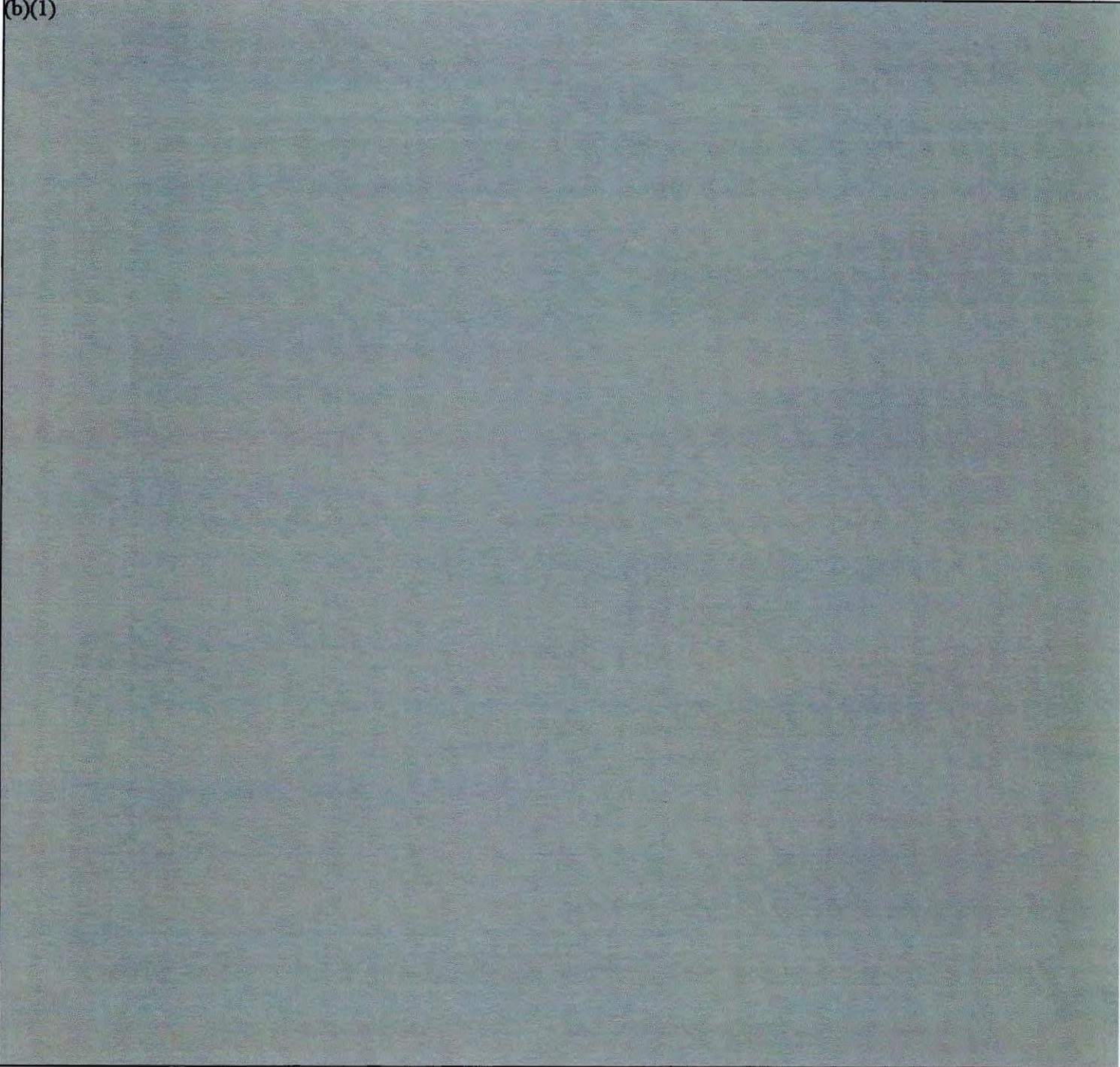
STANDARD MISSILE-2, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
SM-2 BLK I\II\III\A\B

Approved

Demon-

(b)(1)



STANDARD MISSILE-2, December 31, 1995

10b. (U) Performance Characteristics (Cont'd):
SM-2 BLK I\II\III\A\B

b. (U) Previous Change Explanations --

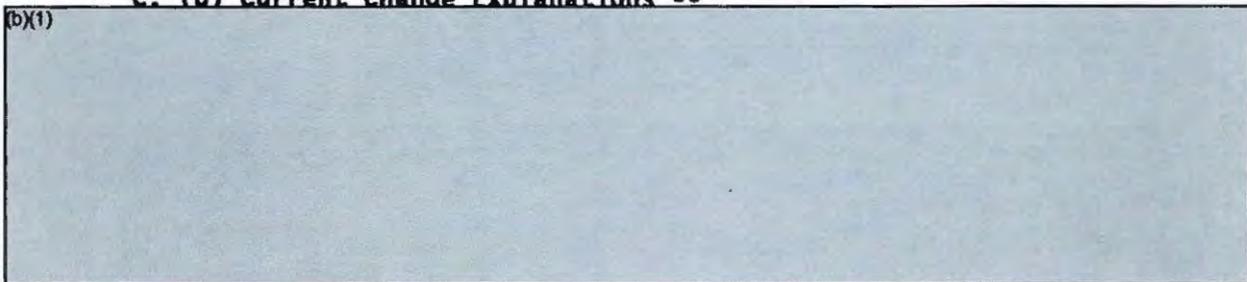
SM-2 Block II MR/ER

Changes reflect test data results.

SM-2 Block III/IIIA/IIIB

Changes reflect test data results.

c. (U) Current Change Explanations --



d. (U) References --

(U) Production Estimate:

SM-2 Block II Milestone III E NPDM OF 17 December 1986. Block III Milestone IIIB NAVY ARB of 12 May 1988.

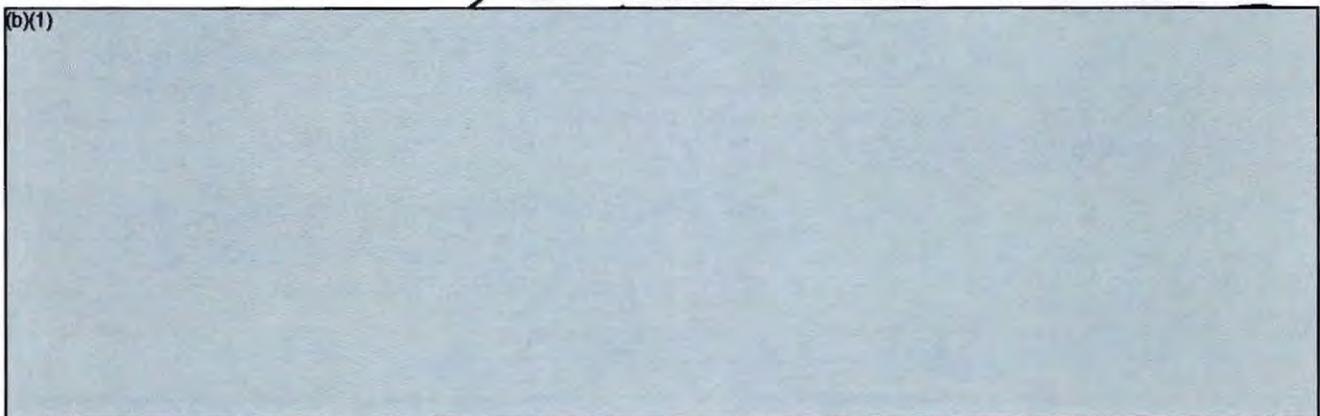
(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 31, 1995.

SM-2 BLK IV

a. (U) Performance --

DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
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STANDARD MISSILE-2, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
SM-2 BLK IV

	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)	[Redacted]		

b. (U) Previous Change Explanations --

Block IV missile operational characteristics updated to reflect latest reliability analyses.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated November 20, 1990.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 04, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):
SM-2 BLK I\II\III\A\B

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. (U) Cost --			
Development (RDT&E)	648.4	770.6	770.3
Procurement	5923.2	5763.5	6432.1
AUR Hardware	(4510.5)		(4448.5)
Other Flyaway	(500.0)		(985.4)
Total Flyaway	(5010.5)		(5433.9)
Non-recurring Support	(388.9)		(486.4)
Fleet Support	(330.9)		(355.2)
Total Other Wpn Sys	(719.8)		(841.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(192.9)		(156.6)
Construction (MILCON)	0.0	34.0	34.2
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 84 Base-Year \$	<u>6571.6</u>	<u>6568.1</u>	<u>7236.6</u>

STANDARD MISSILE-2, December 31, 1995

11a. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK I\II\III\A\B

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1481.2	1097.9	1522.9
Development (RDT&E)	(53.2)	(86.6)	(73.7)
Procurement	(1428.0)	(1002.5)	(1440.6)
Construction (MILCON)	(0.0)	(8.8)	(8.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	8052.8	7666.0	8759.5

b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10778</u>	<u>11504</u>	<u>11505</u>
Total	10778	11504	11505

Excludes 88 RDT&E units that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- 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 83 Block III missiles for \$58.4M. Taiwan has also considered procuring 100 SM-2 BLOCK III missiles.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

SM-2 Block II Milestone III E NPDM of 17 December 1986. Block III Milestone III B NAVY ARB of 12 May 1988.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 31, 1995.

STANDARD MISSILE-2, December 31, 1995

11a. (U) Total Program Cost and Quantity (Cont'd):
SM-2 BLK IV

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	283.9	319.8	320.0
Procurement	1914.6	161.0	314.8
AUR Hardware	(1551.7)		(176.1)
Other Flyaway	(207.0)		(83.8)
Total Flyaway	(1758.7)		(259.9)
Fleet Support	(60.1)		(23.6)
Non-recurring Support	(66.8)		(22.8)
Total Other Wpn Sys	(126.9)		(46.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(29.0)		(8.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 84 Base-Year \$	<u>2198.5</u>	<u>480.8</u>	<u>634.8</u>
Escalation	815.9	155.1	229.9
Development (RDT&E)	(56.2)	(72.1)	(71.9)
Procurement	(759.7)	(83.0)	(158.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	<u>3014.4</u>	<u>635.9</u>	<u>864.7</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>3000</u>	<u>106</u>	<u>160</u>
Total	3000	106	160

Note: At the LRIP Program Decision quantities of 106 were approved with provision for more LRIP quantities should the program not transition to the SM-2 Block IVA as planned. Due to delays in the Navy Area TBMD program, an additional 54 units and 2 years have been added.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Proposed Program Management Plan dated October 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 04, 1995.

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STANDARD MISSILE-2, December 31, 1995

12. (U) Unit Cost Summary:

SM-2 BLK I\II\III\A\B

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY84\$)	7236.6	6568.1	
(2) Quantity	11505	11504	
(3) Unit Cost	0.629	0.571	10.17
b. (U) Procurement			
(1) Cost (BY84\$)	6432.1	5763.5	
(2) Quantity	11505	11504	
(3) Unit Cost	0.559	0.501	11.59

SM-2 BLK IV

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY84\$)	634.8	480.8	
(2) Quantity	160	106	
(3) Unit Cost	3.968	4.536	-12.53
b. (U) Procurement			
(1) Cost (BY84\$)	314.8	161.0	
(2) Quantity	160	106	
(3) Unit Cost	1.968	1.519	29.54

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (MAY 95 APB)	<u>Percent</u> <u>Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	864.7	635.9	
(2) Unit Cost	5.404	5.999	-9.913

*** UNCLASSIFIED ***

STANDARD MISSILE-2, December 31, 1995

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

SM-2 BLK IV

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
d. (U) Procurement			
(1) Cost (TY\$)	472.8	244.0	
(2) Unit Cost	2.955	2.302	28.373

e. (U) Changes from the Previous SAR (SEP 95 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY84\$)	-0.568	-12.52
(2) PAUC (BY84\$)	0.449	29.57
(3) PAUC Quantity	160	N/A
(4) PAUC (TY\$)	-0.595	-9.92
(5) APUC (TY\$)	0.653	28.37

f. (U) Initial SAR (DEC 92)

(1) Program Acquisition Cost (BY\$) --	2567.5
(2) Program Acquisition Cost (TY\$) --	4305.1

g. (U) Unit Cost Changes.

(1) (U) PAUC --

N/A

(2) (U) APUC --

This breach occurred due to Program Budget Decision (PBD) 123 which deleted all funding for SM-2 Block IIIA's all-up rounds (AUR) in FY96. The total SM-2 Buy for FY96 was therefore reduced to 17 SM-2 Block IV missiles over which all support dollars are spread in determining unit cost.

h. (U) Impact of Performance or Schedule Changes on Unit Cost.

The two year extension to SM-2 Block IV and resultant increased quantity had a decreasing effect to PAUC and reduced the extent of the breach to APUC.

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

SM-2 BLK IV

i. (U) Program Management and Control.

Because the AUPC breach occurred as a result of budget action and the resulting low annual buy in FY96, no Program Management or contract issues pertain. POC is CAPT R. L. Wilson, USN, PMS 422, (703) 602-0650 or CDR R. O. Scherini, USN, PMS 422F, (703) 602-1970.

j. (U) Cost Control Actions.

The Program Office will provide continued management attention.

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

- (U) (1) Contractor(s): RAYTHEON COMPANY
- (2) Contract Title: SM-2 IIIA FY94 AUR PROD
- (3) Contract Number: N00024-94-C-5321
- (4) Actual Cost of Work Performed (ACWP) to date: N/A
- (5) Percent contract completed (BCWP/target cost): N/A
- (6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

- (7) (U) Explanation of Variances. - None.
- (8) (U) Impact of Variances on Contract. - None.
- (9) (U) Impact of Variances on Unit Costs. - None.

- (U) (1) Contractor(s): HMSC
- (2) Contract Title: SM-2 IIIA FY94 AUR PROD
- (3) Contract Number: N00024-94-C-5320
- (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. (U) Unit Cost Summary (Cont'd):

SM-2 BLK IV

(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. - None.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

(U) (1) Contractor(s): SMCo

(2) Contract Title: SM-2 IIIA FY95 AUR PROD

(3) Contract Number: N00024-96-C-5304

(4) Actual Cost of Work Performed (ACWP) to date: N/A

(5) Percent contract completed (BCWP/target cost): N/A

(6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. - None.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

1. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

m. (U) General Comments:

SM-2 Block IV currently has no major contracts reported in the SAR.

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STANDARD MISSILE-2, December 31, 1995

13. (U) Cost Variance Analysis:
SM-2 BLK I\II\III\A\B

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

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	701.6	7351.2	0.0	8052.8
Previous Changes:				
Economic	-31.1	-725.6	+1.6	-755.1
Quantity	-	+164.4	-	+164.4
Schedule	-	+641.9	-	+641.9
Engineering	+5.1	+195.5	-	+200.6
Estimating	+158.8	-56.8	+41.2	+143.2
Other	-	-	-	-
Support	-	-63.2	-	-63.2
Subtotal	+132.8	+156.2	+42.8	+331.8
Current Changes:				
Economic	-1.4	-101.3	-	-102.7
Quantity	-	107.2	-	+107.2
Schedule	-	88.7	-	+88.7
Engineering	-	6.6	-	+6.6
Estimating	11.0	178.1	-	+189.1
Other	-	-	-	-
Support	-	86.0	-	+86.0
Subtotal	+9.6	+365.3	-	+374.9
Total Changes	+142.4	+521.5	+42.8	+706.7
Current Estimate	844.0	7872.7	42.8	8759.5

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13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I\II\III\A\B

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	648.4	5923.2	0.0	6571.6
Previous Changes:				
Quantity	-	+235.1	-	+235.1
Schedule	-	+176.8	-	+176.8
Engineering	+16.1	+155.0	-	+171.1
Estimating	+98.2	-318.9	+34.2	-186.5
Other	-	-	-	-
Support	-	+42.9	-	+42.9
Subtotal	+114.3	+290.9	+34.2	+439.4
Current Changes:				
Quantity	-	54.5	-	+54.5
Schedule	-	7.7	-	+7.7
Engineering	-	6.7	-	+6.7
Estimating	7.6	106.5	-	+114.1
Other	-	-	-	-
Support	-	42.6	-	+42.6
Subtotal	+7.6	+218.0	-	+225.6
Total Changes	+121.9	+508.9	+34.2	+665.0
Current Estimate	770.3	6432.1	34.2	7236.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices. Economic Adjustment for Negative Program Change.

Engineering: Increase due to decision to pursue development of SM-2 Block IIIB and SM-2 Block IV.

Estimating: Extension of the Block IIIA and Block IV programs, adjustment for current and prior inflation, reprogramming due to new requirements.

Procurement

Economic: Revised escalation indices.

Quantity: Addition of a program year as a continuing program.

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

SM-2 BLK I\II\III\A\B

- Schedule: Decrease of 110 BLK IIIA missiles. Decrease of a further 18 BLK IIIA missiles. Budget changes. Increase due to program stretch-out and reduction in annual buy quantities. Shifting of missiles to outyears to procure more advanced variants.
- Engineering: Introduction of early phases of low altitude improvements and improvements to the TDD, Warhead and Rocket Motor.
- Estimating: Budget changes. Reduced costs due to competition for all major components in FY 88 and outyears. Increase due to changes in missile mix. Decrease due to inflation assumptions in POM 94. Increases due to continued program stretch-out. Increases due to reduction of annual buy quantities in FYDP. Increase due to changes in inflation assumptions. Correction to align Flyaway and Support.
- Support: Budget changes. Adjustment to reconcile differences in previous support changes. Increase due to realignment of support due to program stretch-out.

MILCON

- Economic: Revised Escalation Indices.
- Estimating: Increase due to expanded facilities to meet requirements. Decrease due to revised requirements in FY 92 and 93.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>ROT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+1.0
Decrease due to CASS Recissions. (Estimating)	-3.1	-4.4
Increase due to adjustment for Unexecutable Program. (Estimating)	+4.8	+6.9
Decrease due to rebalancing FY95. (Estimating)	-2.6	-4.3
Increase due to correction for MHIP reprogramming. (Estimating)	+2.1	+3.0

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13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK I\II\III\A\B

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase due to Congressional Adjustment to add SM Targets Program. (Estimating)	+6.6	+10.0
Decrease due to FY95 Actuals. (Estimating)	-0.9	-1.2
RDT&E Subtotal	<u>+7.6</u>	<u>+9.6</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-101.3
Total variance associated with increase of 160 SM-2 Block IIAs due to delays in the SM-2 Block IIIB program.	+68.9	+135.5
Quantity increase of 160 SM-2 Block IIAs in FY95 due to delays in SM-2 Block IIIB program. (Quantity)	+54.5	+107.2
Allocation to Schedule as a result of quantity increase. (Schedule)	+7.7	+21.7
Allocation to Engineering as a result of quantity increase. (Engineering)	+6.7	+6.6
Increase due to stretchout of annual procurement buy profile. (Schedule)	N/A	+67.0
Adjustment for Current and Prior Inflation. (Estimating)	+5.4	+7.6
Increase due to program stretch-out due to reduced buy quantities in FYDP. (Estimating)	+123.2	+205.7
Decrease due to Adjustments for Nonpay Purchases. (Estimating)	-22.1	-35.2
Adjustment for Current and Prior Inflation. (Support)	+1.0	+1.4
Increase in Initial Spares due to addition of FY07 to 09 Program Years. (Support)	+17.0	+32.0
Increase in Non-recurring Support due to addition of FY07 to 09 Program Years. (Support)	+14.7	+29.4
Increase in Fleet Support due to addition of FY07 to 09 Program Years. (Support)	+9.9	+23.2
Procurement Subtotal	<u>+218.0</u>	<u>+365.3</u>

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STANDARD MISSILE-2, December 31, 1995

13a. (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	0.0	3014.4
Previous Changes:				
Economic	+1.3	+4.9	-	+6.2
Quantity	-	-3071.1	-	-3071.1
Schedule	-	+926.1	-	+926.1
Engineering	-	+123.0	-	+123.0
Estimating	+50.5	-241.2	-	-190.7
Other	-	-	-	-
Support	-	-172.0	-	-172.0
Subtotal	+51.8	-2430.3	-	-2378.5
Current Changes:				
Economic	-0.2	-6.7	-	-6.9
Quantity	-	54.8	-	+54.8
Schedule	-	44.1	-	+44.1
Engineering	-	-	-	-
Estimating	0.2	108.9	-	+109.1
Other	-	-	-	-
Support	-	27.7	-	+27.7
Subtotal	-	+228.8	-	+228.8
Total Changes	+51.8	-2201.5	-	-2149.7
Current Estimate	391.9	472.8	-	864.7

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13a. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	283.9	1914.6	0.0	2198.5
Previous Changes:				
Quantity	-	-1767.2	-	-1767.2
Schedule	-	+184.8	-	+184.8
Engineering	+41.2	-	-	+41.2
Estimating	-5.3	-51.8	-	-57.1
Other	-	-	-	-
Support	-	-119.4	-	-119.4
Subtotal	+35.9	-1753.6	-	-1717.7
Current Changes:				
Quantity	-	35.5	-	+35.5
Schedule	-	26.3	-	+26.3
Engineering	-	-	-	-
Estimating	0.2	73.6	-	+73.8
Other	-	-	-	-
Support	-	18.4	-	+18.4
Subtotal	+0.2	+153.8	-	+154.0
Total Changes	+36.1	-1599.8	-	-1563.7
Current Estimate	320.0	314.8	-	634.8

Note: CARS Computational Model did not allow necessary Quantity allocation to Schedule category in 31 DEC 94 SAR. Previous Schedule variance is therefore overestimated and previous Quantity variance underestimated.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Engineering: Addition of Block IV RDT&E Program.

Estimating: Decrease due to revised requirements. Decrease due to change in requirements. Increase due to correction of controls.

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13b. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

Procurement

Economic: Revised escalation indices. Economic Adjustment for Negative Program Change.

Quantity: Addition of 204 missiles to Block IV total buy. Decrease of 3098 units due to decision to transition to SM-2 BLK IVA production in FY97.

Schedule: Production deferred to FY 95. Increase due to program stretch-out and reduction in annual year buy quantities.

Estimating: Budget changes. Increase due to program stretch-out. Deletion of LLM. Decrease due to change in inflation assumptions. Decrease due to reduction in annual buy quantities and continued program stretch-out. Increase due to changes in inflation assumptions. Correction to align Flyaway and Support. Changes due to Acquisition Efficiency Adjustments, First Destination Adjustments, JLSC Decisions, and DBOF Rate Adjustments.

Support: Increase due to program stretch-out. Adjustments to align flyaway and support. Increase in initial spares. Increase due to realignment of support due to continued program stretch-out. Decrease due to decision to decrease buy of missiles to 106 from 3204.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-0.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
RDT&E Subtotal	<u>+0.2</u>	<u>--</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-6.7
Total variance associated with addition of 54 SM-2 Block IVs in FY97 and 98 due to delays in the SM-2 Block IVA program.	+61.8	+95.5

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13c. (U) Cost Variance Analysis (Cont'd):
SM-2 BLK IV

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increase due to addition of 54 SM-2 Block IVs in FY97 and 98 due to delays in the SM-2 Block IVA program. (Quantity)	+35.5	+54.8
Allocation to Schedule as a result of quantity increase. (Schedule)	+26.3	+40.7
Increase due to Stretchout of annual procurement buy profile with addition of FY97 and 98 Program Year due to delays in the SM-2 Block IVA program. (Schedule)	N/A	+3.4
Adjustment for Current and Prior Inflation. (Estimating)	+3.1	+4.6
Decrease due to Nonpay Purchases. (Estimating)	-9.1	-13.9
Increase due to effects of PBD 123. (Estimating)	+79.6	+118.2
Adjustment for Current and Prior Inflation. (Support)	+0.6	+0.8
Increase in Initial Spares due to addition of FY97 and 98 program years due to delays in the SM-2 Block IVA program. (Support)	+5.8	+8.9
Increase in Non-recurring Support due to addition of FY97 and 98 Program Years due to delays in the SM-2 Block IVA program. (Support)	+1.1	+1.4
Increase in Fleet Support due to addition of FY97 and 98 Program Years due to delays in the SM-2 Block IVA program. (Support)	+10.9	+16.6
Procurement Subtotal	+153.8	+228.8

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

SM-2 BLK I\II\III\A\B

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.747	-0.075	-0.024	0.064	0.018	0.029	--	0.002	0.014	0.761

SM-2 BLK IV

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.005	-0.004	-1.018	6.064	0.769	-0.510	--	-0.902	4.399	5.404

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

a. (U) Procurement --

(U) SM-2 IIIA FY94 AUR PROD:

RAYTHEON COMPANY, BRISTOL, TN

N00024-94-C-5321, FFP/PI

Award: June 15, 1994

Definitized: August 22, 1994

Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	Qty
\$44.2	N/A	101	\$44.2	\$44.2	101

Explanation of Change:

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

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

The FY91 to FY93 SM-2 AUR Production Contracts, N00024-92-C-5305 and N00024-92-C-5310, are greater than 90% complete and not reported in the SAR.

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

<u>(U) SM-2 IIIA FY94 AUR PROD:</u>			Initial Contract Price		
HMSC, TUCSON, AZ			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-94-C-5320, FFP/PI			\$43.5	N/A	101
Award: June 15, 1994					
Definitized: July 15, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$43.5	N/A	101	\$43.5	\$43.5	

Explanation of Change:

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

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

<u>(U) SM-2 IIIA FY95 AUR PROD:</u>			Initial Contract Price		
SMCo, McLean, VA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-96-C-5304, FFP/PI			\$50.4	N/A	160
Award: November 16, 1995					
Definitized: N/A					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$50.4	N/A	160	\$50.4	\$50.4	

Explanation of Change:

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

Contract is expected to be definitized in 3rd Quarter, 1996.

This is the first time this contract is reported in the SAR.

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

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 61.8% (21 yrs/34 yrs)
- (2) Percent Program Cost Appropriated: 79.5% (\$7648.1 / \$9624.2)

SM-2 BLK I\II\III\A\B

- (1) Percent Program Completed: 61.8% (21 yrs/34 yrs)
- (2) Percent Program Cost Appropriated: 80.4% (\$7044.6 / \$8759.5)

SM-2 BLK IV

- (1) Percent Program Completed: 83.3% (10 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 69.8% (\$603.5 / \$864.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years</u> (FY76-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2009)	<u>Total</u>
RD&E	1206.8	21.9	1.6	5.6	1235.9
Procurement	6244.6	132.0	202.1	1766.8	8345.5
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7494.2	153.9	203.7	1772.4	9624.2

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16b. (U) Program Funding Summary (Cont'd):
SM-2 BLK I\II\III\A\B

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

SM-2 BLK I\II\III\A\B

<u>Appropriation</u>	<u>Prior Years</u> (FY76-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2009)	<u>Total</u>
RDT&E	814.9	21.9	1.6	5.6	844.0
Procurement	6165.0	-	82.7	1625.0	7872.7
MILCON	42.8	-	-	-	42.8
O&M	-	-	-	-	-
Total	7022.7	21.9	84.3	1630.6	8759.5

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

SM-2 BLK IV

<u>Appropriation</u>	<u>Prior Years</u> (FY87-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98)	<u>Total</u>
RDT&E	391.9	-	-	-	391.9
Procurement	79.6	132.0	119.4	141.8	472.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	471.5	132.0	119.4	141.8	864.7

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16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I\II\III\A\B

c. (U) Annual Summary -- SM-2 BLK I\II\III\A\B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1982				324.1	305.0	305.0	305.0	7.6
1983				23.6	23.2	23.2	23.2	4.9
1984				17.0	17.3	17.3	17.3	3.8
1985				27.8	29.2	29.2	29.2	3.4
1986				56.8	61.4	61.4	60.3	2.8
1987				40.2	44.7	44.7	43.4	2.7
1988				27.3	31.4	31.4	31.4	3.0
1989				49.6	59.5	59.5	58.9	4.2
1990				47.3	59.0	59.0	57.5	4.0
1991				37.1	48.0	48.0	47.1	4.3
1992				27.6	36.7	36.7	36.2	2.8
1993				24.3	33.0	32.5	30.7	2.7
1994				38.4	53.3	52.2	48.9	2.0
1995				9.3	13.2	10.5	2.4	1.9
1996				15.2	21.9	0.9		2.0
1997				1.1	1.6			2.2
1998				0.9	1.4			2.0

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16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I\II\III\A\B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1999				0.9	1.4			2.3
2000				0.9	1.4			2.2
2001				0.9	1.4			2.2
Subtot				770.3	844.0	811.5	791.5	

Expenditures and Obligations reflect program office records as of February 29, 1996.

Appropriation: 1507 Weapons Procurement, Navy

1976	22		88.0	92.4	48.4	48.4	48.4	6.6
1977								3.6
1977	36		62.2	73.9	42.9	42.8	41.4	3.8
1978	40		66.5	74.2	48.2	48.1	48.1	6.8
1979	40		57.1	66.1	47.3	47.3	47.3	8.7
1980	85		67.7	82.1	64.7	64.7	64.7	11.8
1981	345		156.2	198.2	174.3	174.3	174.3	11.6
1982	495		230.3	287.2	274.3	274.3	271.0	14.3
1983	500		294.1	399.5	403.5	403.5	392.4	9.0
1984	490		311.9	385.5	405.1	405.1	387.2	8.0

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STANDARD MISSILE-2, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I\II\III\A\B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1985	730		394.4	443.5	479.7	474.3	459.0	3.4
1986	1271		589.2	659.9	738.4	738.4	733.1	2.8
1987	1194		471.3	583.2	676.2	676.2	665.6	2.7
1988	1310		414.2	472.7	569.6	569.5	562.0	3.0
1989	1310		435.7	474.7	594.4	591.8	587.0	4.2
1990	710		264.5	304.5	394.5	392.9	387.6	4.0
1991	405		185.8	228.4	303.4	299.6	298.0	4.3
1992	330		151.7	194.4	264.8	261.4	249.7	2.8
1993	330		162.6	180.2	250.1	245.7	226.1	2.7
1994	202		124.7	155.4	220.4	206.4	135.8	2.0
1995	160		96.1	113.8	164.8	134.3	42.7	1.9
1996								2.0
1997	51		40.2	54.7	82.7			2.2
1998	65		45.6	57.7	89.2			2.2
1999	65		44.7	61.3	96.9			2.3
2000	72		42.6	54.2	87.5			2.2
2001	72		43.7	54.1	89.3			2.2
2002	99		50.0	58.7	99.1			2.2

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STANDARD MISSILE-2, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK I\II\III\A\B

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

2003	110		54.3	63.4	109.4			2.2
2004	119		57.7	67.1	118.3			2.2
2005	120		59.1	68.3	123.1			2.2
2006	125		61.0	70.3	129.4			2.2
2007	130		62.8	72.1	135.6			2.2
2008	135		75.2	87.1	167.4			2.2
2009	337		172.8	193.3	379.8			2.2
Subtot	11505		5433.9	6432.1	7872.7	6099.0	5821.4	

Expenditures and Obligations reflect program office records as of February 29, 1996.

Appropriation: 1205 Military Construction, Navy

1989				23.6	29.3	29.3	29.3	4.2
1990				10.6	13.5	13.5	13.5	4.0
Subtot				34.2	42.8	42.8	42.8	
Grand Total	11505		5433.9	7236.6	8759.5	6953.3	6655.7	

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STANDARD MISSILE-2, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK IV

c. (U) Annual Summary -- SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc1 Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1987				25.2	28.0	28.0	27.7	2.7
1988				57.7	66.4	66.4	64.3	3.0
1989				85.9	102.9	102.6	102.3	4.2
1990				72.7	90.7	90.7	90.7	4.0
1991				33.2	42.9	42.5	42.5	4.3
1992				25.6	34.1	34.1	34.1	2.8
1993				12.6	17.1	17.0	14.0	2.7
1994				6.5	9.0	8.9	8.6	2.0
1995				0.6	0.8	0.8	0.8	1.9
Subtot				320.0	391.9	391.0	385.0	

Expenditures and Obligations reflect program office records as of February 29, 1996.

Appropriation: 1507 Weapons Procurement, Navy

1995	28		51.9	55.0	79.6	23.4	7.5	1.9
1996	17		63.1	89.2	132.0	23.1	0.6	2.0
1997	48		65.4	78.9	119.4			2.2

STANDARD MISSILE-2, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
SM-2 BLK IV

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Esc) Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

1998	67		79.5	91.7	141.8			2.2
Subtot	160		259.9	314.8	472.8	46.5	8.1	
Grand Total	160		259.9	634.8	864.7	437.5	393.1	

Expenditures and Obligations reflect program office records as of February 29, 1996.

17. (U) Production Rate Data:

SM-2 BLK I\II\III\A\B

a. (U) Deliveries to Date --

RDT&E
Procurement

Plan/Actual
0/0
9677/9605

b. (U) Approved Design-to-Cost Objective -- N/A.

Approved Design-to-Cost goal: No Design-to-Cost goals apply to the SM-2 program, as this program was initiated in 1966, prior to Design-to-Cost Implementation.

SM-2 BLK IV

a. (U) Deliveries to Date -- 0/0.

b. (U) Approved Design-to-Cost Objective -- N/A.

No Design-to-Cost goals have been developed for the SM-2 Block IV.

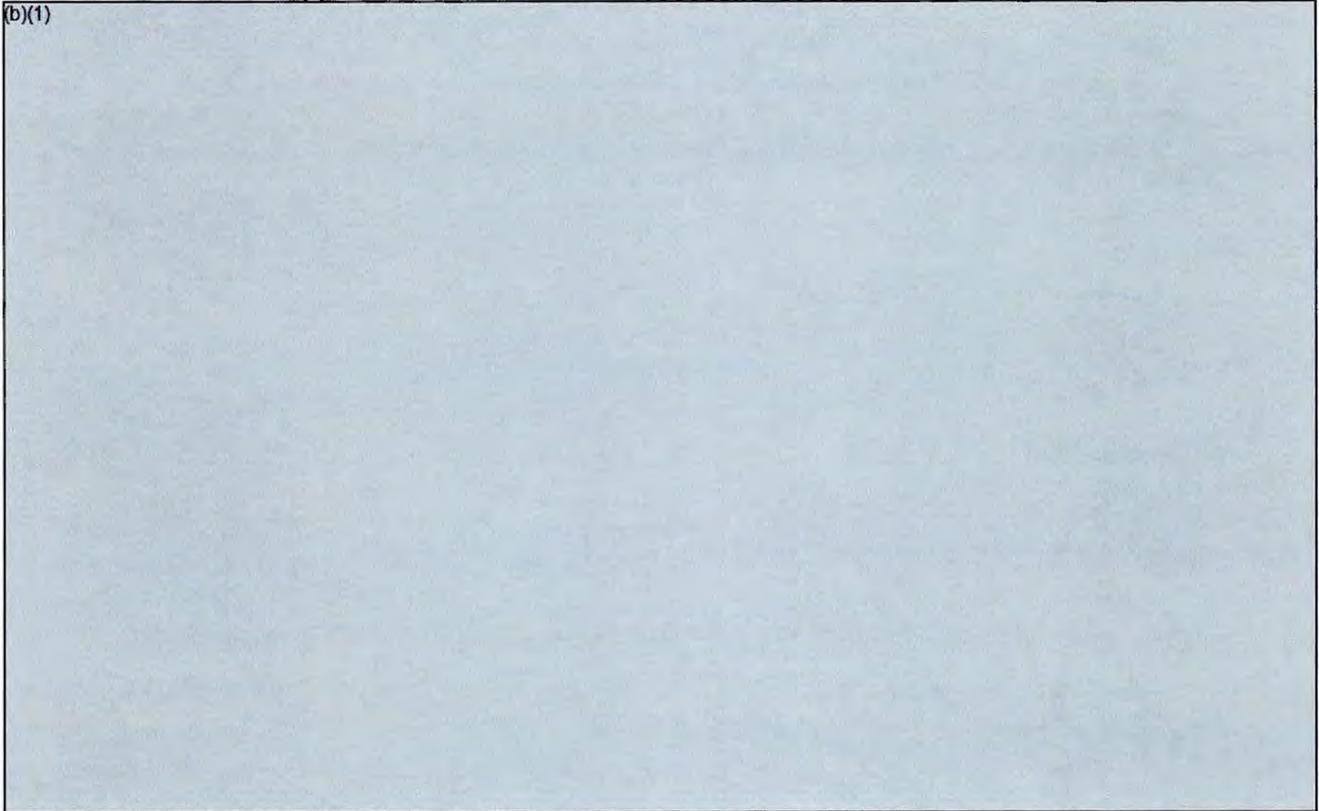
STANDARD MISSILE-2, December 31, 1995

18. (U) Operating and Support Costs:
SM-2 BLK I\II\III\A\B

a. (U) Assumptions and Ground Rules --

Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment Spares and Support Equipment, Equipment Modification, Receipt, Segregation Storage and Issue (RSSI). Direct Support consists of Transportation and Technical Support. There is no Antecedent System.

(b)(1)



STANDARD MISSILE-2, December 31, 1995

18c. (U) Operating and Support Costs (Cont'd):
SM-2 BLK I\II\III\A\B

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

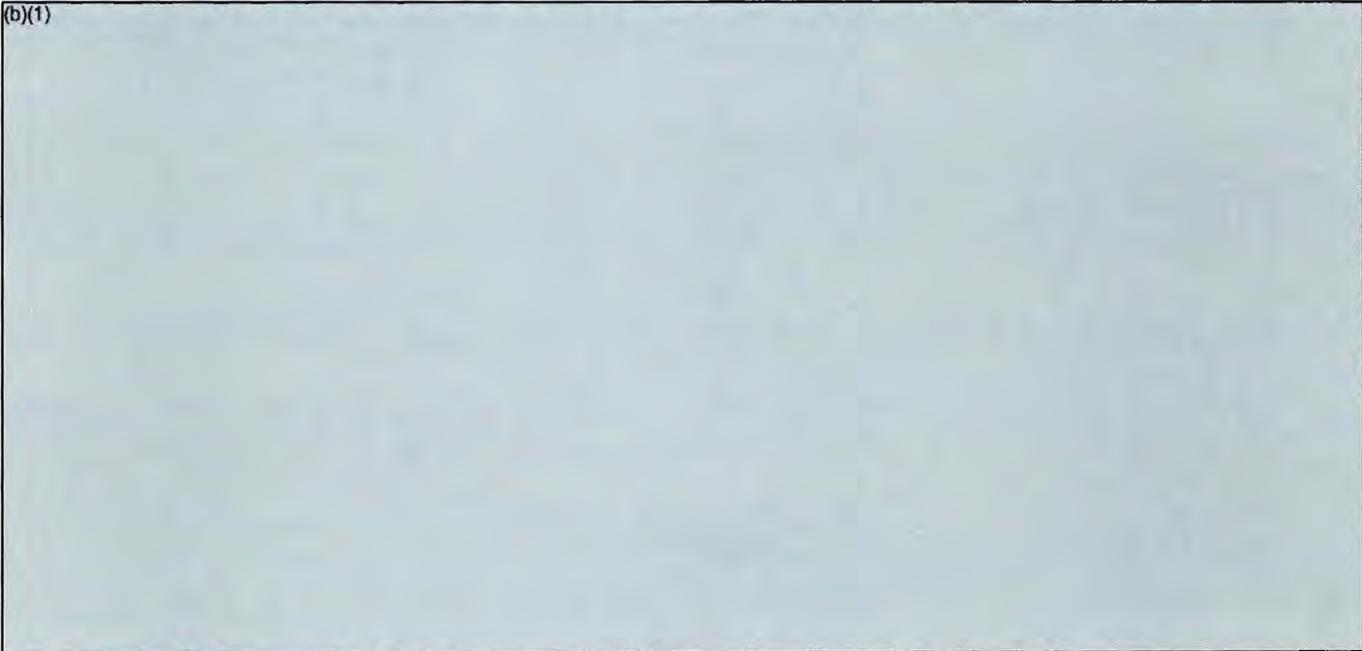
Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	132.5	7.7	7.3	64.7	212.2
Total	132.5	7.7	7.3	64.7	212.2

SM-2 BLK IV

a. (U) Assumptions and Ground Rules --

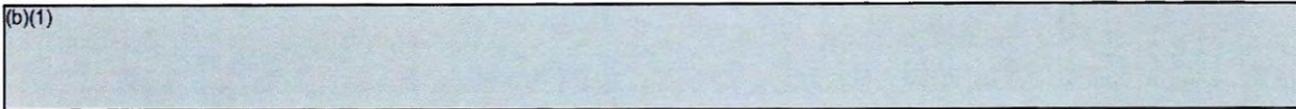
Since the SM-2 is a wooden round, Personnel Costs are unnecessary for missile operation. The O&S Consumables include Range and Target Cost as well as Post Flight Analysis. The Direct Maintenance consists of Intermediate and Depot Maintenance. The Sustaining Investment Category includes Replenishment 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.

(b)(1)



18b. (U) Operating and Support Costs (Cont'd):
SM-2 BLK IV

(b)(1)



c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M,N	---	---	---	1.0	1.0
Total	---	---	---	1.0	1.0

N-22 T-45TS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OEA)823)
PROGRAM: T45TS

AS OF DATE: December 31, 1995

<u>SUBJECT</u>	<u>INDEX</u>	<u>PAGE</u>
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1. Designation and Nomenclature (Preferred Name):
T45TS - Undergraduate Jet Flight Training System (GOSHAWK)
2. DoD Component: Navy
3. Responsible Office and Telephone Number:

PEOASWASH PMA 273	CAPT WILLIAM POSNETT III
ARLINGTON, VA 22243-5120	Assigned: June 18, 1993
AV 664-6211 COMM 703-604-6211	

4. Program Elements/Procurement Line Items:

RDTEE:
FE 0603208N Project H1142

PROCUREMENT:
APFN 1506 ICN 0015/0016 (Navy)

MILCOM:
FE PROJ 236

~~Class. Distribution~~
~~96-C-045~~
~~11/1/1996~~
~~2004~~
~~Name/Qualification~~
~~Dept. of the Navy~~

5. Related Programs:
FE 0603216N Navy Aircrew Common Ejection Seat (NACES)
FE 0604203N Standard Attitude and Heading Reference System
FE 0604777N Global Positioning System Inertial Navigation Assembly

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MAR 28 1996 2
96-C-0446

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

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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 337 Strike and 36 E2/C2 Pilots each year through FY 2020 at two sites, NAS Kingsville and NAS Meridian. The system includes: 174 Production aircraft; 17 simulators; academic material, training aids, & equipment; a computer based Training Integration System (NAS Kingsville) to achieve total system efficiencies; and contractor logistics support of all system elements.

The T-45A is a derivative of the British Aerospace Hawk that has been adapted to provide the capability for carrier catapult take-offs and arrested landings. The simulator suite includes both Instrument Flight Trainers (IFT) and Operational Flight Trainers (OFT). Academics include textbook materials, classroom aids, and a computer-assisted instruction (CAI) system. The TIS utilizes existing hardware and software to provide scheduling and tracking of training events in order to achieve required training efficiency. Contractor logistics support has been structured to provide for future competition of maintenance support services to ensure that the system will be supported in the most cost effective manner. The system is currently up and operating at NAS Kingsville producing winged Naval Aviators.

7. Program Highlights:

a. Significant Historical Developments --

Full Scale Engineering Development of the T-45A Training System (T45TS) began in Sep 84. A twelve aircraft pilot production effort was approved in Nov 87. The first T-45A flight was in Apr 88 and in Nov 88 DT/OT-IIA determined the need to incorporate wing leading edge slats, engine upgrade, and speedbrake changes. Incorporation of these changes resulted in an McDonnell Douglas Aerospace Corporation (MDA) claim against the FSD and FY-88 contracts. In Dec 90, DT/OT-IIB determined changes restored T-45A potential operational suitability and effectiveness.

In Jan 90, McDonnell Douglas Corporation (MDC) began to move production from Douglas Aircraft Company (DAC) to MDC, St. Louis, Mo. The move was completed in late 90.

Low Rate Initial Production was approved in Jun 91 and the first production aircraft was delivered to Naval Air Station (NAS) Kingsville, Tx. in Dec 91. In May 92, the digital cockpit upgrade (Cockpit 21) development contract was awarded. A landing mishap in Jun 92 led to a revision of the Acquisition Program Baseline (APB) in Apr 93.

Operational Evaluation (OPEVAL) was completed 8 Apr 94. The T45TS was determined to be operationally effective and operationally

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7a. Program Highlights (Cont'd):

suitable. Approval for fleet introduction was recommended. The first class of T45TS student jet pilots began on 4 Jan 94. The first T45TS trained aviators received their "Wings of Gold" on 5 Oct 94.

Milestone III and Full Rate Production approval for 174 total T-45A aircraft was received in Jan 95.

b. Significant Developments Since Last Report --

F405-RR-401 engine durability remains high interest due to readiness impacts. Engine High Pressure Nozzle Guide vanes (HPNGV), Low Pressure Nozzle Guide Vanes (LPNGV), and Front Combustion Liner (FCL) assemblies are experiencing premature degradation and early removal. Fleet availability impacts have been minimized through development and use of borescope inspections prior to attaining 1000 hours.

A draft contractual agreement between the Navy/MDA and the Navy/Rolls-Royce has been prepared that outlines the engine Hot End Improvement (HEI) program. The contractor will: warrant 1,000 hour durability for the LPNGV, HPNGV, and FCL; fund the engineering program for redesign and test of HPNGV and FCL improvements similar to their responsibility for the LPNGV; and provide no cost ECP for LPNGV, HPNGV, and FCL. The Navy will: waive ASMET III for LPNGV redesign and grant engine qualification release (upon receipt and approval of outstanding compliance documentation); release withholds for LPNGV/HPNGV/FCL less government incurred expenses; and provide engine test asset for HPNGV and FCL.

Fleet trials of vapor-aluminized HPNGVs as a potential life improvement to HPNGV failures began in Sep 95 on three engines. Some improvement has been noted at the 500 hour inspection.

The digital cockpit upgrade (CP-21) commenced development testing 5 Mar 96. In Sep 95, contract modifications were awarded to MDA for the CP21 development, which extended the period of performance and allowed for the correction of design deficiencies identified during Mar 95 developmental testing. The operational assessment is scheduled for Apr 96. The ECP is now scheduled for Jun 96 approval for production incorporation commencing with aircraft A084.

As of Dec 31, 1995, the Training Command had flown over 57,200 T-45A flight hours. There were a total of 139 students in twenty-one classes in training.

The MDA claim is in deposition/documentation phase. Last MDA estimate of claim value was approximately \$450M (Oct 95). The Alternate Disputes Resolution (ADR) concluded Jan 96 without resolution. PEO(A) is considering arbitration to mediate a

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7b. Program Highlights (Cont'd):

resolution. Litigation procedures are on-going and a hearing before the Armed Service Board of Contract Appeals (ASBCA) is scheduled for 17 Jun 96.

A current unit cost reduction initiative being implemented by the airframe prime contractor, MDA, is consolidation of the AV-8B and T-45A contractor program management teams. A consolidation savings proposal was submitted by MDA with the FY95 production proposal and is currently being negotiated. The estimated cost reductions have been incorporated into the FY97 T45TS budget submission.

The T45TS is expected to satisfy mission requirements.

c. Changes Since As Of Date --

Cockpit 21 began DT IIIA on 5 Mar 96 at NAS Patuxent River, MD.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline dated January 19, 1995. There are no Nunn McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Program Initiated	JUL 75	JUL 75	JUL 75
Requirements Validation Study	MAR 78	MAR 78	MAR 78
MENS Approved	JUN 79	JUN 79	JUN 79
RFQ For Concept Definition	DEC 79	DEC 79	DEC 79
Project Charter Approved	AUG 80	AUG 80	AUG 80
ASE Studies Completed	MAR 81	MAR 81	MAR 81
Sustain Engr Contract Award	NOV 81	NOV 81	NOV 81
DEM/VAL Contract Award (Pre FSED)	SEP 82	SEP 82	SEP 82
Program Redirect (All Carrier Qual)	NOV 83	NOV 83	NOV 83
Advance Development Contract Award	JUL 84	JUL 84	JUL 84
Milestone I/II (DSARC)	SEP 84	SEP 84	SEP 84
FSED Letter Contract	SEP 84	SEP 84	SEP 84
Milestone IIIA Approval Pilot Prod (APP)	SEP 87	SEP 87	SEP 87
T45A First Flight	MAR 88	MAR 88	APR 88
Pilot Lot II FY 89	DEC 89	DEC 89	DEC 89
Milestone IIIA (ALRIP) FY92	NOV 91	NOV 91	APR 92
Complete Navy Tech Eval (NTE)	AUG 93	AUG 93	NOV 93
Complete OPEVAL	DEC 93	DEC 93	APR 94

T45TS, December 31, 1995

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
Initial Operational Capability	NOV 92	NOV 92	APR 93
Milestone III Authorized Full Production	JAN 95	JAN 95	JAN 95
Contractor Logistics Support (CLS) Competition	OCT 97	OCT 97	OCT 97

b. Previous Change Explanations --

The previous changes include revisions leading up to MSIII approval by OSD (Authorized Full Production APBA Jan 95).

c. Current Change Explanations -- None.

d. References --

Production Estimate:
Draft SCP of January 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated January 19, 1995.

10. Performance Characteristics:

a. Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
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

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10a. Performance Characteristics (Cont'd):

	RdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Waveoff (altitude loss ft)	50	50 / 70	<70	<70
Bolter (ground roll distance ft @ 15 kts WOO)	325	325 / 425	310-375	310-375
Lateral Directional Stability (sideslip excursion approach configuration) (deg)	4	4 / 6	6	6
Roll Off at Stall (approach configuration) (deg)	<30	<30 / 30	15-20	15-20
"G" Excursion Speed Brake Extension (Gs)	.25	.25 / .40	.35	.35
Longitudinal Stability (stick free damping ratio 10,000 ft @ .86 IMW)	.45	.45 / .25	.30	.30
Simulator				
Total Time Lag Error (ms)	124	124 / 155	155	155
Digital Computational System				
Main Memory with spare (MB)	4.0/2.75	4.0/2.75 / 4.0/2.0	4.0/2.0	4.0/2.0
Processing Capacity (ms)	16.05	16.05 / 16.67	<16.67	<16.67
Visual System Luminance (ft-1)	2.0	2.0 / 1.5	2.16	2.16
Academics				
Memory/Spare (K/MB)	640/80	640/80 / 640/40	640 / 80	640 / 80
Terminal Response Time (sec avg)	<3	<3 / 3	<3	<3
Training Integration System				
Memory (RAM) (MB)	256	256 / 192	192	192
I/Os per second	210	210 / 75	75	75

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Terminal Response Time (sec avg)	<3	<3 / 3	<3	<3
Aircraft				
Speed				
Max Level Flt (Mach)	.84	.84 / .83	.845	.845
Approach (kts)	125	125 / 125	124.4	124.4
Sustain G's @ 15,000 ft	3.4	3.4 / 3.2	3.3	3.3
Mean Flight Hours Between Failure (MFHBF)	3.2	3.2 / 2.0	3.2	3.2
Direct Maintenance Man Hours/Flight Hour (DMH/FH)	10	10 / 10	8.33	8.33
Availability (%)	85	85 / 75	76	76
Simulator				
Availability (%)				
Instrument Flight Trainer (IFT)	95	95 / 80	90	90
Operational Flight Trainer (OFT)	95	95 / 80	90	90
Academics				
Computer Aided Instruction (CAI) System Availability (% Sched)	95	95 / 85	100	100
Training Integration System (TIS)				
Availability (% Sched)	95	95 / 85	85	100
Pilot Training Rate	450	450 / 450	N/A	N/A

b. Previous Change Explanations --

The previous changes included revisions leading up to the current Jan 95 APBA (MS III) Full Rate Production approval.

c. Current Change Explanations -- None.

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10d. Performance Characteristics (Cont'd):

d. References --

Production Estimate:
Draft SCP of January, 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated January 19, 1995.

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

	Production Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	898.9	898.9	867.8
Procurement	4595.2	4595.2	4531.3
Airframe/CFE	(2738.5)		(2778.5)
Engines	(194.3)		(196.3)
GFE	(137.8)		(113.2)
Change Allowance/ECO	(62.6)		(24.2)
Nonrecurring flyaway	(198.6)		(212.5)
Total Flyaway	(3321.8)		(3324.7)
Training Equipment	(337.1)		(292.2)
Other	(651.3)		(644.8)
Total Other Wpn Sys	(988.4)		(937.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(285.0)		(269.6)
Construction (MILCON)	34.0	34.0	33.9
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	5528.1	5528.1	5433.0
Escalation	71.4	71.4	-16.0
Development (RDT&E)	(-167.1)	(-167.1)	(-154.9)
Procurement	(241.4)	(241.4)	(141.7)
Construction (MILCON)	(-2.9)	(-2.9)	(-2.8)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	5599.5	5599.5	5417.0
b. Quantity --			
Development (RDT&E)	2	2	2
Procurement	174	174	174
Total	176	176	176

The percentage of LRIP units has increased proportionately to the total quantity reduction (300 to 174). The original program planned 48 LRIP (FY89/90) units or 16% of 300 total. Due to delays in completing development which approved Full Rate Production in FY-95, OSD directed procurement of 60 LRIP units (FY89 thru FY94).

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

Subsequently the total was reduced to 174 units resulting in the current 34% ratio to the total (174).

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:
Draft SCP of January, 1984.

Approved Program:
DAE Approved Acquisition Program Baseline dated January 19, 1995.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY95\$)	5433.0	5528.1	
(2) Quantity	176	176	
(3) Unit Cost	30.869	31.410	-1.72
b. Procurement			
(1) Cost (BY95\$)	4531.3	4595.2	
(2) Quantity	174	174	
(3) Unit Cost	26.042	26.409	-1.39

The UCR Baseline (Jan 95 APBA) has been corrected to include \$34M for Construction/ MILCON (BY\$) erroneously omitted from the Dec 94 SAR.

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13. Cost Variance Analysis:

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

	RDTEE	PROC	MILCON	TOTAL
Production Estimate	731.8	4836.6	31.1	5599.5
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-19.6	-	-	-19.6
Estimating	-	-0.1	-	-0.1
Other	-	-	-	-
Support	-	-27.1	-	-27.1
Subtotal	-19.6	-27.2	-	-46.8
Current Changes:				
Economic	5.5	-106.8	0.1	-101.2
Quantity	-	-	-	-
Schedule	-	-4.8	-	-4.8
Engineering	-	32.8	-	+32.8
Estimating	-4.8	-23.8	-0.1	-28.7
Other	-	-	-	-
Support	-	-33.8	-	-33.8
Subtotal	+0.7	-136.4	-	-135.7
Total Changes	-18.9	-163.6	-	-182.5
Current Estimate	712.9	4673.0	31.1	5417.0

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

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

	RDTE&E	PROC	MILCON	TOTAL
Production Estimate	898.9	4595.2	34.0	5528.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-20.3	-	-	-20.3
Estimating	-4.4	+1.0	-	-3.4
Other	-	-	-	-
Support	-	-31.0	-	-31.0
Subtotal	-24.7	-30.0	-	-54.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-4.8	-	-4.8
Engineering	-	36.4	-	+36.4
Estimating	-6.4	-29.7	-0.1	-36.2
Other	-	-	-	-
Support	-	-35.8	-	-35.8
Subtotal	-6.4	-33.9	-0.1	-40.4
Total Changes	-31.1	-63.9	-0.1	-95.1
Current Estimate	867.8	4531.3	33.9	5433.0

b. Previous Change Explanations --

RDTE&E

Engineering: Deletion of funding for alternate engine exploration (FY93).

Estimating: Reduced estimate to complete developmental testing.

Procurement

Estimating: Revision of methodology for estimating engineering hours.

Support: Revised estimate of ILS requirements and spare parts.

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

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+5.5
Adjustment for Current and Prior Inflation. (Estimating)	-6.9	-5.5
Revised estimate to complete CP21 development and correct design deficiencies found during testing. (Estimating)	+0.8	+0.8
Adjustment to reflect actuals of expired appropriations. (Estimating)	-0.6	-0.4
Increase for T45TS Alternate Dispute Resolution claim support. (Estimating)	+0.3	+0.3
RDT&E Subtotal	<u>-6.4</u>	<u>+0.7</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-106.8
Adjustment for one year delay in production shut down costs (FY-04 to FY-05) (Schedule)	-0.7	-0.7
Reduction due to delay in CP-21 ECP incorporation from FY-95 to FY-96. (Schedule)	-4.1	-4.1
Correction adjustment to reflect the engineering changes (ECO) previously incorporated into 88/89/92/93 aircraft. (Engineering)	+36.4	+32.8
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+2.6
Foreign Exchange Rate Adjustment due to dollar/pound exchange rate for MDA (FY88). (Estimating)	+14.4	+12.4
Revision of methodology for estimating engineering hours, Forward Pricing Rate Agreements (FPRA), and MDA consolidation savings. (Estimating)	-60.8	-54.8

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

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for additional nonrecurring costs associated with MDA aircraft Fatigue issues and tracking, and reduced requirements in ancillary equipment. (Estimating)	+15.2	+16.0
Adjustment for Current and Prior Inflation. (Support)	-0.1	+0.2
Revised estimate in spares support requirements. (Support)	-11.8	-13.2
Training Equipment, reduction in hardware (TIS) requirements and as a result of the delay in the stand up of (NAS) Meridian. (Support)	-44.8	-37.2
Revised estimate in ILS requirements. (Support)	+20.9	+16.4
 Procurement Subtotal	 -33.9	 -136.4
 (3) MILCON		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
 MILCON Subtotal	 -0.1	 --

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Plan Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
17.967	-1.308	4.064	0.437	4.337	5.007	--	1.311	13.848	31.815

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
31.815	-0.575	--	-0.027	0.075	-0.164	--	-0.346	-1.037	30.778

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

a. RDT&E -- <u>COCKPIT 21:</u> MCDONNELL DOUGLAS CORP, ST. LOUIS, MO N00019-92-C-0069, CPIF Award: May 29, 1992 Definitized: March 31, 1994	Initial Contract Price		
	Target	Ceiling	Qty
	\$71.0	N/A	1
	Current Contract Price		
	Target	Ceiling	Qty
	\$68.5	N/A	1
	Estimated Price At Completion		
	Contractor	Program Manager	
	\$68.5	\$68.5	
	Cost Variance	Schedule Variance	
Previous Cumulative Variances	\$0.5	\$-2.1	
Cumulative Variances To Date (01/31/96)	\$-2.3	\$-0.2	
Net Change	\$-2.8	\$1.9	

Explanation of Changes:

The initial contract price reflected estimates prior to Letter Contract definitization.

Ceiling Price is not applicable.

The net change in the CPR cum variances is a result of the (Jan 96) CPR reporting against the original baseline (cost and schedule). The variance primarily results from the extended flight test program which identified deficiencies in the CP-21 design.

The contract was subsequently modified in Sept 95 to increase the negotiated cost and target price to \$68.5M, and extended the period of performance to correct the design deficiencies found during developmental testing. The CPR rebaseline (cost and schedule) resulting from the (Sept 95) contract modifications is planned to be reflected in Feb 96 CPR.

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15. Contract Information (Cont'd):

b. Procurement --			Initial Contract Price		
<u>T45TS FY 94 PRODUCTION:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO					
N00019-93-C-0098, FFP			\$247.1	N/A	12
Award: May 28, 1993					
Definitized: December 15, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$250.2	N/A	12	\$250.2	\$250.2	

Explanation of Change:

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

Target Price reflects definitized contract award of 12 T-45A aircraft and applicable ILS, GTS and spares.

<u>T-45A GFE ENGINES:</u>			Initial Contract Price		
ROLLS ROYCE, plc, ,			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-93-C-0100, FFP					
Award: November 30, 1993			\$52.9	N/A	0
Definitized: March 23, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$52.9	N/A	0	\$0.0	\$216.0	

Explanation of Change:

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

The Basic contract was awarded to Rolls Royce (Nov 93) and contains eight options, FY-94 through FY01.

The current funding total reflects definitization of the FY-94 and FY-95 options, and award of the FY-96 (option) Advance Acquisition Contract (AAC) Termination Liability (TL) funding.

The Program Managers EAC reflects the total estimate of contract which includes eight (8) option years at approximately \$27M annually.

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15. Contract Information (Cont'd):

<u>T45TS FY95 PRODUCTION:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS CORP, ST. LOUIS, MO					
N00019-94-C-0058, FFP			\$74.4	N/A	0
Award: December 31, 1994					
Definitized: N/A					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$74.4	N/A	0	\$0.0	\$206.1	

Explanation of Change:

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

The target price reflects the award of the Advance Acquisition Contract (AAC) Termination Liability funding. Definitization is expected in Jun 96.

The Program Manager's EAC reflects the funding expected for definitization of contract.

<u>T45TS FY96 PRODUCTION:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS CORP, ST. LOUIS,, MO					
N00019-95-C-0164, FFP			\$15.0	N/A	0
Award: September 30, 1995					
Definitized: N/A					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$15.0	N/A	0	\$0.0	\$272.5	

Explanation of Change:

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

The target price reflects the Advance Acquisition Contract (AAC) Termination Liability (TL) funding. Definitization is expected in Jun 96. The Program Manager's EAC reflects the funding expected for definitization of contract.

FY92 and FY93 Production contracts are over 90% complete and will no longer be reported.

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

a. Program Status --

- (1) Percent Program Completed: 65.4% (17 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 63.1% (\$3416.4 / \$5417.0)

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

Appropriation	Prior Years (FY80-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2005)	Total
RDT&E	711.1	1.3	0.5	-	712.9
Procurement	2333.0	339.9	317.3	1682.8	4673.0
MILCON	31.1	-	-	-	31.1
O&M	-	-	-	-	-
Total	3075.2	341.2	317.8	1682.8	5417.0

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrac	Rac		Program	Obligated	Expanded	

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

1980			7.1	7.1	4.2	4.2	4.2	10.6
1981			2.5	2.5	1.6	1.6	1.6	10.6
1982			7.3	7.3	4.9	4.9	4.9	7.6
1983			11.1	11.1	7.8	7.8	7.8	4.9
1984			32.3	32.3	23.6	23.6	23.6	3.8
1985			89.6	89.6	67.5	67.5	67.5	3.4

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1986			156.6	156.6	121.4	121.4	121.4	2.8
1987			178.6	178.6	142.5	142.5	142.5	2.7
1988			120.5	120.5	99.4	99.4	96.0	3.0
1989			106.0	106.0	91.1	91.1	91.1	4.2
1990			29.5	29.5	26.4	26.4	26.4	4.0
1991			15.6	15.6	14.5	14.5	14.5	4.3
1992			50.3	50.3	48.0	48.0	44.5	2.8
1993			30.4	30.4	29.7	29.7	29.6	2.7
1994			28.0	28.0	27.9	27.9	24.0	2.0
1995			0.6	0.6	0.6	0.6	0.4	1.9
1996			1.3	1.3	1.3	0.2		2.0
1997			0.5	0.5	0.5			2.2
Subtot	2		867.8	867.8	712.9	711.3	700.0	

Appropriation: 1506 Aircraft Procurement, Navy

1987				78.8	65.1	65.1	65.1	2.7
1988	12	55.9	274.5	481.5	415.1	415.1	405.1	3.0
1989	24	9.1	429.0	418.6	375.3	375.3	375.2	4.2

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1990		15.4		137.6	127.6	127.6	127.0	4.0
1991		39.9		159.6	152.3	152.2	120.8	4.3
1992	12	27.1	227.1	374.1	365.0	365.0	327.8	2.8
1993	12	8.3	225.1	281.2	279.6	279.6	236.0	2.7
1994	12	12.3	218.0	289.6	293.8	286.8	155.7	2.0
1995	12	10.4	209.8	250.3	259.2	111.5	12.3	1.9
1996	12	5.7	209.8	321.2	339.9	3.5	0.6	2.0
1997	12	2.6	206.0	293.3	317.3			2.2
1998	12	2.9	203.0	258.6	286.0			2.2
1999	12	1.6	200.5	279.3	315.8			2.3
2000	12	0.6	198.1	280.2	323.7			2.2
2001	12		196.0	248.2	293.1			2.2
2002	12		194.1	207.7	250.7			2.2
2003	6		121.2	131.5	162.2			2.2
2004				9.8	12.4			2.2
2005		20.7		30.2	38.9			2.2
Subtot	174	212.5	3112.2	4531.3	4673.0	2181.7	1825.6	

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

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1205 Military Construction, Navy

1988				10.8	9.2	9.2		3.0
1989								4.2
1990				12.9	11.8	11.8		4.0
1991								4.3
1992								2.8
1993				10.2	10.1	10.1		2.7
Subtot				33.9	31.1	31.1		
Grand Total	176	212.5	3980.0	5433.0	5417.0	2924.1	2525.6	

MILCON claimant is Chief of Naval Education and Training (CNET).

17. Production Rate Data:

a. Deliveries to Date --

RDT&E
Procurement

Plan/Actual

2/2
66/66

T-45A deliveries accepted to date (Mar 96) are through A065. A066 is planned for acceptance by the end of Mar 96.

b. Approved Design-to-Cost Objective -- N/A.

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18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operations of the T45TS is for total contractor logistic support (CLS), where the Navy provides the appropriate operational military personnel and flightline consumables, and the remainder is a turn key contractor operation. This program was specifically scoped to a 306 pilot training rate (PTR) per year, spread over two sites (NAS Meridian, and NAS Kingsville, TX). In order to meet this PTR, 101 aircraft are required to fly approximately 713.5 flight hours each per year. The steady state quantity of flight hours is 72059. These quantities reflect the incorporation of JPATS into the T45TS program, and were used in the calculation of Mission Personnel, Unit-Level Consumption, Contractor Logistics Support, Sustaining Support and Indirect Support. In section b costs, Mission Personnel costs include the costs for pay and allowances for enlisted personnel and officers. Contractor personnel involved in the maintenance of the T-45 are not included in the element, but within the CLS portion of the O&S.

Unit-Level Consumption costs include the cost for Petroleum, Oil & Lubricants (POL) required for peacetime operations, and Training Ordnance costs. The 36 PTR for E2/C2 aircraft have no ordnance requirements, and therefore are not included in the estimate. Consumables/Repair Part and Depot Level Repairables are not included in Unit-Level Consumption, but within CLS, as maintenance is performed by the contractor.

Contractor Logistics support costs include the costs for Aircraft Maintenance; Ground Training System (GTS Maintenance, Replenishment Spares, ROR, Simulator Maintenance, and Operations Costs); Training Spt Center Maintenance; Program & Administrative Mgt; Off Site Repair (Engine Depot ROR, Aircraft ROR, SE ROR, and Airframe Rework); Detachment Support; Travel & Per Diem; and other Direct Charges. Sustaining Support Costs include the costs for Modifications kits needed to achieve acceptable levels of safety, overcome mission capability deficiencies, and reliability, and reduce maintenance costs. Support Equipment Replacement is performed by the contractor, and is included in CLS under ROR. Sustaining Engineering Support, Software Maintenance, and Simulator Operations costs are also included in the cost for CLS.

Indirect costs include the costs for Student Aviators and Installation Support. Installation Support includes costs for personnel normally assigned to the host installation who are required for the unit to perform its mission in peacetime.

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

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

Cost Element	Avg Annual Cost Per T-45/YEAR	Avg Annual Cost Per Steady State
MISSION PERSONNEL	212.8	24.3
UNIT LEVEL CONSUMPTIONS	166.0	18.9
CONTRACTOR SUPPORT	1017.3	116.0
SUSTAINING SUPPORT	61.7	7.0
INDIRECT SUPPORT	439.3	50.1
Total	1897.1	216.3

Data in accordance with O&S Study dated Feb 96.

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MS	57.8	69.0	81.4	95.9	304.1
Total	57.8	69.0	81.4	95.9	304.1

FY95 reflects FY95 Actuals. TO COMPLETE reflects FY98 Estimate.

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A-3 ASAS

021

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)B23)

PROGRAM: ASAS

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
All Source Analysis System (ASAS)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
1616 Anderson Road COL Richard W. Johnson
McLean, VA 22102-1616 Assigned: October 7, 1991
AV 235-8110 COMM (703)-275-8110

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

ROT&E:
PE 64321A, D2FT, D926, DB19, DB20, 64321F, D396

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AS AMENDED
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USA Lucy Richardson

96-C-0466

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

PROCUREMENT:

APPN 2035 ICN BA9704 (Army)
APPN 2035 ICN BA9520 (Army)
APPN 2035 ICN K20801 (Army)
APPN 2035 ICN MA9704 (Army)
APPN 2035 ICN B59704 (Army)
APPN 3080 ICN 1683790 (Air Force)

5. (U) Related Programs:

Army Tactical Command and Control Systems (ATCCS), which include: Maneuver Control System (MCS), Advanced Field Artillery Tactical Data System (AFATDS), Combat Service Support Control System (CSSCS), Forward Area Air Defense Command and Control System (FAADC2), and Common Hardware Software (CHS). Joint Prototyping/Technology Insertion Office (JP/TIO, which includes WARRIOR and Warlord), Tactical Simulation (TACSIM), Joint Collection Management Tools (JCMT, which includes Collection Management Support Tools (CMST)), Joint Deployable Intelligence Support System (JDISS), Standard Integrated Command Post Shelters (SICPS), Commander's Tactical Terminal - Hybrid Receive Only (CTT-HR), Integrated Meteorological System (IMETS), Digital Topographical Support System (DTSS), Battle Command Battle Laboratory (BCBL) Huachuca, and Single Source Processor-Signals Intelligence (SSP-S).

6. (U) Mission and Description:

As the Intelligence and Electronic Warfare (IEW) sub-system of the ATCCS, the All Source Analysis System (ASAS) provides all source intelligence fusion to gain a timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. With this knowledge, battle managers will be able to view the battlefield and more effectively conduct the land battle. ASAS is a tactically deployable ADP system used to receive and correlate data from strategic and tactical intelligence sensors/sources; produce ground battle situation displays; rapidly disseminate intelligence information; provide target nominations; help manage organic IEW assets; and assist in providing operational security (OPSEC) support. The system is theater independent and designed to operate in peace-time, supporting contingency and crisis operations during low, mid, and high intensity wartime, and during restoration and return to peace stabilization periods. ASAS has been designated by Congress as the Army's only tactical intelligence fusion project.

ASAS is being produced and fielded in two hardware configurations and three software versions. The current configuration, Block I, was formerly planned for procurement and fielding to corps and active divisions in the years 1992 through 1997. This configuration was restructured in FY91 to include Hawkeye, an OSD-sponsored

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

balanced technology initiative. Because of the restructuring, Block I will now be fielded to the above units in the FY93-95 timeframe without having had to go into full rate production.

Block I is made up of the Communications Control Set AN/TYQ-40 which receives and transmits information from multiple sensor systems; the Data Processor Set AN/TYQ-36 which processes intelligence data; the Workstation, Computer Graphics AN/TYQ-37 which is the primary user interface with the system; and Workstation, Computer Graphics AN/TYQ-52(V) which processes intelligence data.

Block II is made up of objective hardware modules using ATCCS Common Hardware/Software (CHS) components. ASAS Block II hardware procurement will begin in FY99 and full fielding to the Army's force structure will begin in FY00. ASAS Block III is a software development effort which will bring ASAS to its full objective capabilities. It will be used with the hardware procured in Block II. There is no Block I antecedent system. ASAS Block II replaces ASAS Block I equipment with improved functionality and common hardware and software. The ASAS acquisition strategy maximizes the use of government and commercial Non-Developmental Item software, OSD directed Common Operating Environment software, incremental phased deliveries, and continuous user test and evaluation.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
ASAS was to be the Army portion of a joint program originally chartered at Congressional request to acquire an Army/Air Force fusion system to meet the critically needed requirements for an automated intelligence command and control system. As a result of Congressional review and Department of the Army guidance, all modules were downsized into smaller shelters more appropriate to the battlefield environment. During FY85 the program developed the ASAS Interface Module (AIM) Brassboard (ABB) which provided a near-real-time processing capability. The System Readiness and Verification Test for the ASAS AIM and the Forward Sensor Interface Control (FSIC) Module was successfully completed in October 1986. Subsequent to the test, this equipment was delivered to III Corps/2nd Armored Division. In 1986 the Assistant Secretary of the Army (Research, Development and Acquisition) approved a directed limited procurement urgent (LPU) for the Limited Capability Configuration (LCC). The procurement contract was let in March 1987 for production of LCC's. In November 1987, the Joint Oversight Group (JOG) approved an acquisition strategy of LCC's to be delivered to Ft Hood, TX in FY89. In February 1988, the JOG approved the expansion of the LCC acquisition to include systems to Europe. During 1989, ASAS conducted its Force Development Test and

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7a. (U) Program Highlights (Cont'd):

Experimentation which supported the Operational Test and Evaluation Agency's continuous evaluation of ASAS. On 10 January 1990, the Chief of Staff of the Army directed the program restructure to field the system very quickly with minimum level of functionality acceptable to the user. In April 1990 the Air Force withdrew from the Joint Tactical Fusion Program Office (JTFPO). In May 1991 the JTFPO was disestablished by DA General Order 11. The Army placed ASAS under the Program Executive Office for Command and Control Systems. On 4 December 1991, the C3I Committee approved release of the RFP for the Block II contract for conversion to ATCCS hardware/software. The ASAS software was accredited by the Defense Intelligence Agency. On 19 December 1991, the ASAS Acquisition Program Baseline, Test and Evaluation Master Plan, Acquisition Strategy Report were approved by the Defense Acquisition Executive. On 17 January 1992, the Request for Proposal for the ASAS Block II Engineering and Manufacturing Development (E&MD) contract was released. ASAS Block I IOT&E was conducted 8 Sep-11 Oct 1992.

In 1993, three units received ASAS Block I equipment and training. Operational Effectiveness was successfully demonstrated at the Technical Test and Operational Demonstration in May-Apr 1993. ASAS received DIA accreditation for operational use world-wide in March 1993. First Unit Equipped (FUE) was the 82nd Airborne Division. In July 1993, the Army Systems Acquisition Review Council (ASARC) approved the ASAS to proceed to the Defense Acquisition Board (DAB) for a Milestone II decision for ASAS Block II. ASAS was granted Type Classification Limited Procurement for Block I. In October 1993, a "paper" DAB approved MSII for ASAS Block II and an Acquisition Decision Memorandum dated 21 October 1993 approved entering E&MD for Block II. ASAS Block II contract was awarded to Martin Marietta on 29 October 1993.

In 1994, the Vice Chief of Staff, Army (VCSA) approved the ASAS-Extended concept that would field an ASAS Capability to the remainder of the force by using proven ASAS software on commercial hardware. It is a non-developmental item (NDI) suite of commercial hardware running standard ASAS software. ASAS-Extended allows fielding an ASAS capability to the entire force earlier than planned and at a fraction of the cost of the ruggedized Block I system.

A successful Block I IOT&E II was conducted during Aug-Sep 94. The Operational Evaluation Command (OEC) found ASAS to be operationally effective and suitable for its intended use.

In June 1994, the Project Manager ASAS was designated PM Intelligence Fusion with responsibility for ASAS, Single Source Processor-SIGINT (SSP-S) and the Joint Prototyping Office (JPO). Joint Collection

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7a. (U) Program Highlights (Cont'd):

Management Tools (JCMT) was added in 1995 and the Integrated Meteorological System (IMETS) program in 1996.

b. (U) Significant Developments Since Last Report --
ASAS has embarked on a new dimension of operational employment. As directed by USCINCEUR, USAREUR has deployed three Mini-Deployable Intelligence Support Element (Mini-DISE) teams to non-US IFOR units supporting Task Force Eagle (Nordic Brigade, Russian Brigade, Turkish Battalion). Each team has a laptop computer with either ASAS-Warlord or ASAS Warrior software.

On 31 October, 1995, a major Block II contract modification was executed. A rewrite of the program baseline and acquisition strategy has been initiated to reflect the restructured program and PEO guidance to implement the Common Operating Environment, the Modern Information Database (MIDB) and Task Force XXI initiatives and exercises. Draft revisions of the Acquisition Program Baseline, the Acquisition Strategy Report, and the Test and Evaluation Master Plan went to DA and OSD for staffing.

PM Intel Fusion accepted the Block II, Phase 1 delivery from Lockheed Martin Astronautics (LMA) on 4 April 1995.

In February, 1996, the Army, in an effort to streamline testing, directed that ASAS revise its test strategy to reflect the Secretary Perry directive to have a single test and evaluation program to collect and evaluate both operational and technical data and to make better use of data collection opportunities provided by training, unit exercises, etc. ASAS is one of four systems selected for initiating this approach and Operational Evaluation Command has the lead to prepare a single System Evaluation Plan (SEP) to be incorporated into the TEMP. The SEP is not expected to be available before May 1996. After receipt of the SEP inputs, the new TEMP will be submitted to the TIWG for approval within 30 days. After TIWG approval, the TEMP can then go through the full approval process (PEO C3S, HQ TRADOC, HQ OPTEC, and DA staff).

ASAS will be providing Brigade and Battalion warfighters automated tools to be more effective and will do this three years earlier than planned.

The Collateral Workstation (CWS) was transitioned to CECOM on 1 March 1995. Fielding of all 12 Block I systems was completed in March, 1995.

The ASAS system is expected to satisfy mission requirements.

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7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --

ASAS is being used extensively in Bosnia and the database capabilities give the warfighter a big advantage. The ASAS products are extremely reliable and are a real success story.

The RWS-VI software baseline was successfully transitioned to CECOM in February 1996. Also, the Single Source Capability Package (CP01) drop to the Government occurred in February 96.

By March 1996, every EAC, Corps and Division had an ASAS capability.

8. (U) Threshold Breaches:

Block II/III

There is currently a schedule breach to the approved Acquisition Program Baseline (APB) dated 21 Oct 93. Both a Program Deviation Report and a revised Acquisition Program Baseline (APB) have been submitted. There are currently no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Joint Oversight Group (ASARC Authority Approves Block II)	NOV 87	NOV 87	NOV 87
DAB Program Review	AUG 93	AUG 93	AUG 93
Block II RDT&E Contract Award (EMD)	SEP 93	SEP 93	OCT 93
Phase 2 (TSE Functionality) Prototype Delivery	JUL 95	JUL 95	N/A
Phase 3 (EAC Functionality) Prototype Delivery	MAR 96	MAR 96	N/A
Preliminary Design Review	MAR 96	MAR 96	N/A
Critical Design Review	AUG 96	AUG 96	N/A
DT&E			
Start	JAN 98	JAN 98	N/A
Complete	FEB 98	FEB 98	N/A
IOT&E			
Start	JUL 98	JUL 98	N/A
Complete	SEP 98	SEP 98	N/A
First Article Test	FEB 00	FEB 00	N/A
Organic Support Capability	OCT 98	OCT 98	N/A
Depot Support Capability	NOV 98	NOV 98	N/A
Block II Milestone III	APR 99	APR 99	N/A
Block II Prod Contract Award	MAY 99	MAY 99	N/A

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

(U) Milestones (Cont'd) --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Initial Operational Capability	DEC 99	DEC 99	DEC 99
Block III EMD Contract Award	JUN 99	JUN 99	APR 99
Block III FOT&R	OCT 02	OCT 02	N/A
Block III Milestone III	JUL 03	JUL 03	MAY 03
Incremental Delivery, Phase 1	N/A		JUN 95 (Ch-1)
Incremental Delivery, Phase 2	N/A		JUN 96 (Ch-1)
Incremental Delivery, Phase 3	N/A		DEC 97 (Ch-1)
Incremental Delivery, Phase 4	N/A		JUN 98 (Ch-1)
Block II Milestone III/Block III Milestone II	N/A		MAR 99 (Ch-1)

b. (U) Previous Change Explanations --

In 1992, reductions in funding available during the Block II development period forced the combat developer to reprioritize its requirements. This resulted in amendments to the RFP and postponing contract award from January 1993 to June 1993. The Block II prototype development effort provides for user reviews and tests of capability packages provided to Block I systems as part of the contract deliverables. Milestone III associated with the Block II development effort moved from November 97 to July 99 because of the delay in the Engineering and Manufacturing Development contract award.

Restructured ASAS Block I will be fielded to Force Package I using already procured modules and requiring only an ASARC/IPR approval for material release. ASAS Milestone III decision scheduled originally for Block I in February 1993 is now scheduled for November 1997 for Block II. Block II will be fully interoperable with ATCCS and will be built on common hardware and software CHS II and will use open architecture.

Block II RDT&E contract award changed from SEP93 to OCT93 to reflect actuals. Milestones added to the APB dated October 21, 1993. Contract award changed from NOV99 to N/A because it is no longer part of the approved program. Initial Operational Capability changed from AUG01 to DEC99 IAW accelerated fielding.

New APB being processed includes new milestones not originally in the SAR Development Estimate. Due to restructured streamlined program, milestones which are no longer applicable to the ASAS Block II are being deleted from the ASAS Block II APB, and will be deleted from future SARs.

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

c. (U) Current Change Explanations --

(Ch-1) Received revised fielding guidance from DA DCSOPS.

d. (U) References --

(U) Production Estimate:

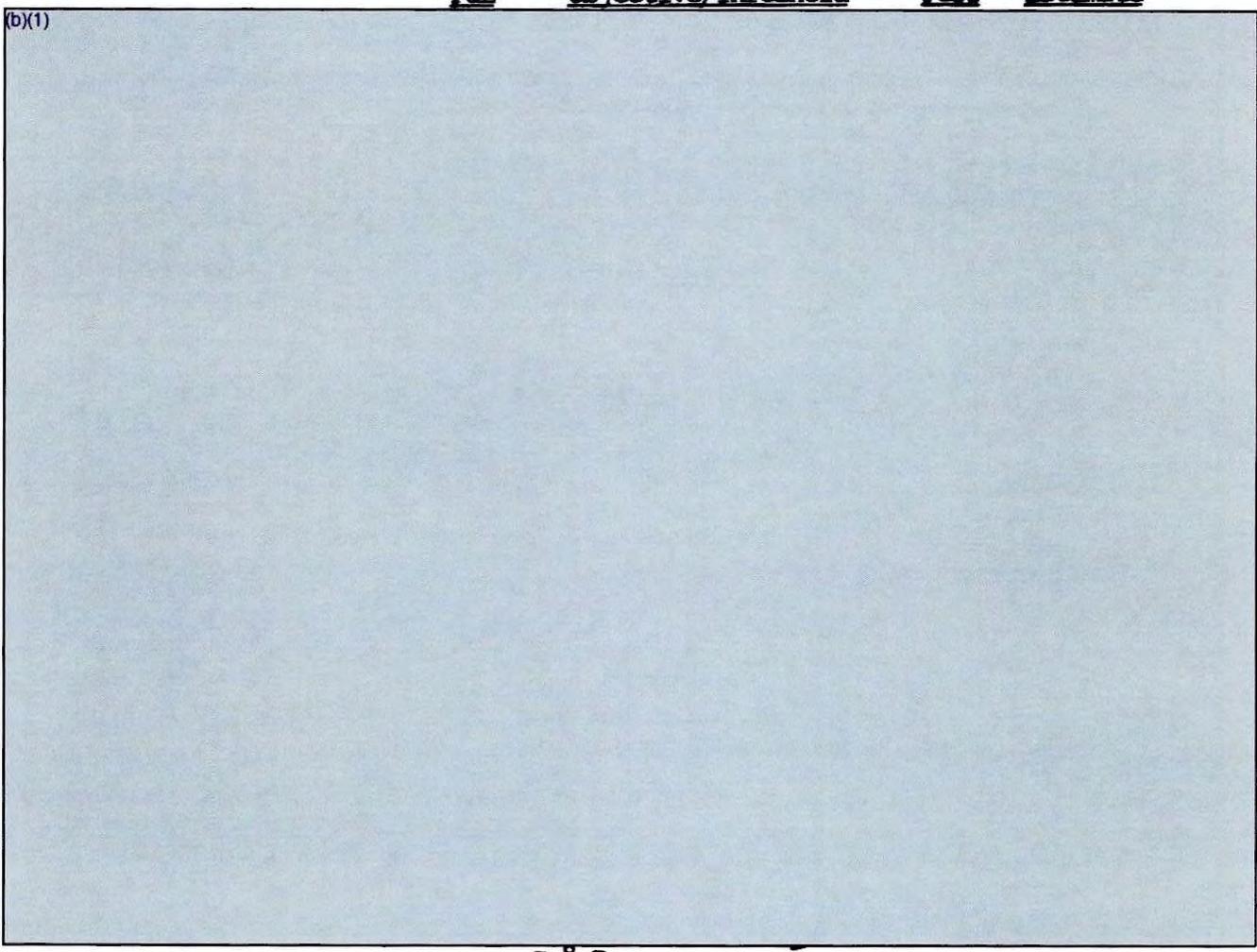
Acquisition Program Baseline approved December 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
-----------------------	------------	---	----------------------------------	----------------------------



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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Target Development	Auto generation of target nomination msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.	Auto generation of target nomination msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.	/ Generation of target nomination msg w/in 2 minutes of receipt of info meeting analyst preset criteria in 85% of all cases.	TBD	Auto generation of target nomination msg w/in 30 seconds of receipt of info meeting preset criteria in 90% of all cases.
Collection Management	Integration of DoD Std Collection Mgt Systems.	Integration of DoD Std Collection Mgt Systems.	/ Integration of Army Std. Collection Mgt. Systems	TBD	Integration of DoD Std Collection Mgt Systems.
Interoperability with ATCCS (SCI/Collateral)	Auto Sanitize	Auto Sanitize	/ Manual Sanitize	TBD	Auto Sanitize
Interoperability with DIA MIIDS/IDB	Auto Data Base Exchange	Auto Data Base Exchange	/ Bulk Load Updates	TBD	Auto Data Base Exchange

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

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Direct transmission/receipt of SCI/Non-SCI Message Traffic	Computer to Computer File Exchange	Computer to Computer File Exchange	Process All ASAS Required DoD Std. MTF Messages Automatically in 95% of all trials.	Computer to Computer File Exchange
Message Volume	Process 29,000 combined I/O msgs w/ peak => 4,350 per hour in 24 hours at Division	Process 29,000 combined I/O msgs w/ peak => 4,350 per hour in 24 hours at Division	Process 21,000 combined I/O msgs w/ peak => 2,100 per hour in 24 hours at Division	Process 29,000 combined I/O msgs w/ peak => 4,350 per hour in 24 hours at Division
DIA Accreditation for Operation	Multi-Level Security Process	Multi-Level Security Process	System High	Multi-Level Security Process
Continuity of operations during tactical redeployment	=> 2,828 I/O msgs combined during peak hour.	=> 2,828 I/O msgs combined during peak hour.	Process => 1,365 I/O msgs combined during peak hour.	=> 2,828 I/O msgs combined during peak hour.

ACRONYMS:

- USMTF - US Message Text Format
- TSE - Tactical Operations Center Support Element
- TCAE - Technical Control and Analysis Element
- FSIC - Forward Sensor Interface and Control
- ENSIT - Enemy Situation

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

CCS - Communications Control Set

G2-TOC - Assistant Chief of Staff, Intelligence (General Staff)
Tactical Operations Center

Footnotes:

1/ Due to the evolutionary nature of ASAS, the noted performance parameters represent a desired military capability for the initial fielding and Block II development of ASAS. Performance parameters of enhancements and upgrades will meet full ORD requirements and Defense Information Systems Agency (DISA)/DODIIS Interoperability Standards, and will be provided during the evolutionary phase of the program.

2/ Block III will provide the remote workstation, enhance the previously developed software applications functionality, and provide new software applications in the disciplines of electronic warfare, operations security, human intelligence, imagery intelligence, and communication intelligence/electronic intelligence integration. Block III performance parameters will be provided prior to Block III Critical Design Review (CDR).

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated 19 December 1991.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	259.3	259.3	262.4
Procurement	279.8	279.8	282.3
Flyaway	(256.3)		(266.3)
Other Wpn Sys Costs			(0.0)
Peculiar Support	(0.5)		(0.5)
Initial Spares	(23.0)		(15.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 86 Base-Year \$	539.1	539.1	544.7

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

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	270.7	270.7	267.0
Development (RDT&E)	(108.2)	(108.2)	(106.4)
Procurement	(162.5)	(162.5)	(160.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	809.8	809.8	811.7

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>28</u>	<u>28</u>	<u>28</u>
Total	28	28	28

ASAS unit of measure consists of a system being fielded to 28 Army Contingency units in Force Package one and two. These units are Army priority units identified in Division, Corps, and Echelons-Above-Corps.

c. (U) Foreign Military Sales/International Cooperative Programs -- Not Applicable.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated December 1991.
FY93 President's Budget dated February 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 21, 1993.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (OCT 93 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY86\$)	544.7	539.1	
(2) Quantity	28	28	
(3) Unit Cost	19.454	19.254	1.04

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

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY86\$)	282.3	279.8	
(2) Quantity	28	28	
(3) Unit Cost	10.082	9.993	0.89

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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	367.5	442.3	0.0	809.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+6.3	+11.2	-	+17.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+6.3	+11.2	-	+17.5
Current Changes:				
Economic	-13.9	-25.4	-	-39.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	3.0	-	-	+3.0
Estimating	5.9	27.8	-	+33.7
Other	-	-	-	-
Support	-	-13.0	-	-13.0
Subtotal	-5.0	-10.6	-	-15.6
Total Changes	+1.3	+0.6	-	+1.9
Current Estimate	368.8	442.9	-	811.7

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

a. (U) Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	259.3	279.8	0.0	539.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-3.0	-11.6	-	-14.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-3.0	-11.6	-	-14.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	2.2	-	-	+2.2
Estimating	3.9	21.6	-	+25.5
Other	-	-	-	-
Support	-	-7.5	-	-7.5
Subtotal	+6.1	+14.1	-	+20.2
Total Changes	+3.1	+2.5	-	+5.6
Current Estimate	262.4	282.3	-	544.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices and adjustment for negative program change.

Estimating: Adjustment for current and prior inflation. Revised Program Estimate dollar amounts now reflect accelerated program. Increase program cost to include total program content beyond FYDP.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.

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

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-13.9
Adjustment for Current and Prior Inflation. (Estimating)	+1.8	+2.4
Added Funding for Battlefield Visualization. (Engineering)	+2.2	+3.0
Refined program estimate. (Estimating)	+2.1	+3.5
	<u> </u>	<u> </u>
RDT&E Subtotal	+6.1	-5.0
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-32.6
Economic adjustment for negative program change. (Economic)	N/A	+7.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Added funding for ASAS-Extended fielding (Estimating)	+21.4	+27.6
Revised estimate for reduced INITIAL SPARES requirement. (Support)	-7.5	-13.0
	<u> </u>	<u> </u>
Procurement Subtotal	+14.1	-10.6

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
30.050	--	--	--	--	--	--	--	--	30.050

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

b. (U) Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
28.921	-1.404	--	--	0.107	1.829	--	-0.464	0.068	28.989

No Initial Estimate for PAUC was possible because no unit of measure had been defined.

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

a. (U) RDT&E --

(U) ASAS Block II:
 Martin Marietta Astro, Littleton, CO
 DAAG07-94-C-A515, CPAF
 Award: October 29, 1993
 Definitized: October 29, 1993

Initial Contract Price
Target Ceiling Qty

\$115.2 N/A 28

Current Contract Price
Target Ceiling Qty
 \$115.2 N/A 28

Estimated Price At Completion
Contractor Program Manager
 \$130.7 \$109.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.9	\$3.9
Cumulative Variances To Date (01/28/96)	\$1.5	\$-0.5
Net Change	\$-0.4	\$-4.4

Explanation of Change:

TF XXI initiatives required us to bring forward and expand efforts for a Remote Workstation to support battlefield visualization by the Brigade and Battalion warfighters. Many contract cost saving and streamlining initiatives are in process as well as significant schedule changes.

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

a. (U) Program Status --

- (1) Percent Program Completed: 40.0% (6 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 21.8% (\$177.1 / \$811.7)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY91-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	114.8	51.2	36.2	166.6	368.8
Procurement	4.5	6.6	10.3	421.5	442.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	119.3	57.8	46.5	588.1	811.7

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY86 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

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

1991				2.7	3.3	3.3	3.0	4.3
1992				15.2	19.1	19.0	18.8	3.0
1993				33.4	42.9	42.9	40.4	2.4
1994				6.4	8.4	8.4	8.2	2.0
1995				30.8	41.1	41.1	35.7	1.9
1996				37.5	51.2	27.0	3.0	2.0

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				26.0	36.2			2.2
1998				17.0	24.2			2.2
1999				18.1	26.4			2.3
2000				15.3	22.8			2.2
2001				20.9	31.8			2.2
2002				20.0	31.1			2.2
2003				19.1	30.3			2.2
2004								2.2
Subtot				262.4	368.8	141.7	109.1	

Appropriation: 2035 Other Procurement, Army

1995			3.3	3.3	4.5	23.4	17.3	1.9
1996			4.8	4.8	6.6	5.9	0.6	2.0
1997			7.3	7.3	10.3			2.2
1998			4.6	4.6	6.7			2.2
1999	2		17.6	17.7	26.2			2.3
2000	5		40.6	41.6	63.1			2.2
2001	10		46.1	48.8	75.7			2.2

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

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2002	9		48.8	52.6	83.4			2.2
2003	2		44.2	48.4	78.3			2.2
2004			47.6	51.8	85.7			2.2
2005			1.4	1.4	2.4			2.2
Subtot	28		266.3	282.3	442.9	29.3	17.9	
Grand Total	28		266.3	544.7	811.7	171.0	127.0	

Recurring costs in years without quantities represent incremental procurement of workstation upgrades and Brigade/Battalion workstations, both of which are other than the unit of measure.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

(Reference: Army Cost Position (ACP), July 1993) The concept of operation for ASAS is a mobile battlefield automated data processing system operating on a peacetime scenario utilizing an operating tempo of 2160 hours per year, with exception to Military Pay which is based on a wartime scenario with an operating tempo of 7555.5 hours per year. The system employs a three tier maintenance concept. At the Organizational level, system malfunctions will be analyzed

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

down to the Line Replaceable Unit (LRU); at the intermediate (DS/GS) level, repair and replacement of unserviceable assemblies and subassemblies will be accomplished; and major overhaul and rebuilding will occur at the Depot.

The costs to operate and support the system include personnel costs of operators, maintainers, and support personnel. PCS costs are included. The sustaining materiel cost consists primarily of replenishment spares and repair parts, POL, and Modifications Kits.

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

Cost Element	Avg Annual Cost Per Block II	Avg Annual Cost Per Antecedent
Personnel	1.7	1.2
O&S Consumables	0.0	0.0
Direct Depot Maintenance	0.4	1.0
Sustaining Investment	0.2	0.4
Other Direct Costs	0.2	0.1
Indirect Costs	0.4	0.9
Total	2.9	3.6

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Comanche (RAH-66)

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Comanche Program (RAH-66)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

Comanche Program Manager's Office	BG James R. Snider
ATTN: SFAE-AV-RAH	Assigned: September 27, 1994
4300 Goodfellow Blvd.	AV 693-1800 COM 314 263-1800
St. Louis, MO 63120-1798	

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

RDT&E:

- PE 63220 Project D325
- PE 64810 Project D327, DC72
- PE 64216 Project DC72
- PE 64223 Project D327, D397, DC72

PE 64810 Project D327/DC72 (FY88 Only)

CLEARED AS AMENDED
FOR OPEN PUBLICATION

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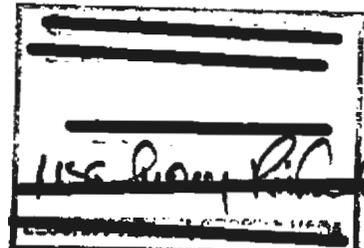
DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

~~Classified by: Comanche Security Classification Guide, November 1, 1992~~
~~Declassify on: OADR~~

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Comanche (RAH-66), December 31, 1995

5. (U) Related Programs:

Air-to-Air Stinger Missile System; Hellfire Anti-tank Missile System and Longbow.

6. (U) Mission and Description:

This program provides for the development of the RAH-66 Comanche. The Army requires an aviation system capable of performing aerial reconnaissance on the modern battlefield. Combat lessons learned and mission analysis have repeatedly supported a critical combat requirement for an aviation reconnaissance system capable of 24 hour combat operations, responsive to the battlefield commander in night and adverse weather conditions and able to survive on the 21st century battlefield. This air cavalry helicopter system will be self-deployable with highly improved sustainability and availability to support continuous combat operations in any world trouble spot. Comanche will be able to find the enemy with a low probability of self-detection and either engage or hand-off the target based on the battle commander's decision. The air cavalry system will be able to operate effectively in the close, deep or rear battles. Comanche incorporates emerging technologies to provide a leap-ahead air cavalry system, field a world-wide deployable, air cavalry reconnaissance helicopter; operate with minimal logistical burden, serve as the command and control node for the commander to win the knowledge war. This system will provide three dimensional battlefield situational awareness with greater depth and breadth than currently possible. This picture of the battlefield will be overlaid on digital maps that consolidate all real time data. The system will display friend or foe discrimination and will avoid detection and survive by reducing signature and incorporating low observable technology. The Comanche helicopter will replace the current light fleet of tactically obsolescent AH-1, OH-6 and OH-58A/C helicopters. The Comanche system will be integrated with the Army aviation force structure to complement the AH-64 Apache helicopter.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In March 1982, the Army Aviation Mission Area Analysis (AAMAA) was endorsed by senior Army leadership at the Army Aviation Systems Program Review. From that review, the Comanche emerged as the most viable concept to meet fleet needs. A Comanche Justification for Major Systems New Start (JMSNS) was submitted in June 1983. The Comanche was further developed and refined during FY 1984. In December 1985, a Defense Science Board (DSB) Task Force was established to review the Comanche program. The task force reported the Army had a need for a new light helicopter and that technology existed which could support the design of a weapon system of much greater performance than the existing fleet. As the result of the June 9, 1988, Comanche Milestone I Defense Acquisition Board (DAB)

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7a. (U) Program Highlights (Cont'd):

review, an Acquisition Decision Memorandum (ADM) dated June 17, 1988, approved the Comanche program to proceed with Demonstration/Validation (Dem/Val). In 1988, the Light Helicopter Turbine Engine Company (LHTEC) was announced the winner of the competitive T800 engine program. The Comanche program was restructured in August 1990. The restructure deferred the Engineering and Manufacturing Development (EMD) and extended the Dem/Val phase by an additional two years. In 1991, the Boeing Sikorsky team was declared the winner of the competitive Comanche air vehicle program and was awarded a contract for the Dem/Val Prototype phase. The Comanche program was again restructured in January 1992, as a result of the Defense Acquisition Executive Guidance and the FY 1993 President's budget reductions. The restructured contract modifications were issued to Boeing Sikorsky and LHTEC in January 1993. In December 1994, the Comanche Program was restructured as a prototype industrial/technology base program with two flyable prototypes.

b. (U) Significant Developments Since Last Report --
As the result of the Defense Acquisition Board review of the Comanche restructured program, an Acquisition Decision Memorandum was issued in March 1995 to continue the Demonstration/Validation phase with two flyable prototypes and add six aircraft within the FYDP for user evaluation.

The Comanche system is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date --
First Flight of Aircraft #1 was achieved January 4, 1996.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated January 30, 1996. Nunn-McCurdy unit cost reporting is not required for this pre-milestone II program in accordance with Section 2433, Title 10, USC.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
T800 Engine FSD Contract Award	JUL 85	JUL 85	JUL 85
Milestone I (ASARC)	FEB 87	MAY 88	MAY 88
Milestone I (DAB)	MAR 87	JUN 88	JUN 88
Award Air Vehicle Phase I Dem/Val Contracts	OCT 87	OCT 88	OCT 88

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

(U) Milestones (Cont'd) --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
T800 FSD Downselection	SEP 88	OCT 88	OCT 88
USD(A) Program Review	N/A	JAN 91	JAN 91
Award Dem/Val Prototype Phase Contract	N/A	APR 91	APR 91
Early Operational Assessment			
Start	N/A	N/A	N/A
Complete	N/A	N/A	N/A
Critical Design Review	N/A	OCT 93	DEC 93
Dem/Val Prototype Flight Test Program			
Start	N/A	N/A	N/A (Ch-1)
Complete	N/A	N/A	N/A (Ch-1)
Milestone II (ASARC)	FEB 87	N/A	N/A
Milestone II	MAR 87	OCT 01	OCT 01
Award EMD Contract	JUL 89	N/A	N/A (Ch-1)
First Flight	SEP 91	NOV 95	JAN 96 (Ch-2)
Initiate Assembly of EOC Aircraft	N/A	NOV 99	NOV 99 (Ch-3)
T800 Engine Production Contract Award	JAN 93	N/A	N/A (Ch-1)
LUT			
Start	N/A	JUL 03	JUL 03
Complete	NOV 93	SEP 03	SEP 03
Updated to Preproduction Configuration	N/A	SEP 04	SEP 04 (Ch-3)
LRIP Program Review (IPR)/Contract Award	N/A	NOV 04	NOV 04
IOT&E Training/ARTEP			
Start	N/A	N/A	N/A (Ch-1)
Complete	N/A	N/A	N/A (Ch-1)
IOT&E			
Start	N/A	SEP 05	SEP 05
Complete	N/A	NOV 05	NOV 05
First Air Vehicle Production Delivery	JUL 95	N/A	N/A (Ch-1)
First Unit Equipped	MAY 96	N/A	N/A
Production Contract	JAN 94	NOV 06	NOV 06
Milestone III	JAN 94	JUL 06	JUL 06
IOC	N/A	JUL 06	JUL 06
Depot Support Date	N/A	JUL 06	JUL 06 (Ch-3)
Organic Support Date	N/A	JUL 09	JUL 09 (Ch-3)
RAM Validation			
Start	N/A	N/A	N/A (Ch-1)
Complete	N/A	N/A	N/A (Ch-1)
DT/EUTE* Completed	N/A	N/A	N/A
Air Vehicle Production Contract Award (LRIP)	N/A	N/A	N/A (Ch-1)

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

(U) Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IIIA (LRIP)	N/A	N/A	N/A
IOTE Completed	N/A	N/A	N/A

b. (U) Previous Change Explanations --

Milestones revised from AMC approved Acquisition Strategy (December 16, 1985) to reflect 1995 IOC Acquisition strategy as approved by the Chief of Staff of the Army on November 10, 1986. Milestones were revised based upon DAE approved baseline dated June 15, 1988 (Milestone I ADM, dated June 17, 1988). Milestones changed as a result of a schedule assessment made in response to the direction contained in the SecDef letter, August 23, 1990. Program restructured per DAE, January 29, 1992, subject: Implementation of Acquisition Decision. Dates changed from TED to the current estimate dates shown in Approved Program Baseline dated January 4, 1993 due to initiation of the Comanche Restructured Dem/Val Prototype Program. Critical Design Review milestone revised to actual date. Dem/Val Prototype Flight Test Program Start milestone revised as a result of schedule assessment. Early Operational Assessment milestone deleted from current baseline because of duplication with Limited User Testing. Milestone dates changed in response to approval of the Army's Comanche Early Operational Capability program.

c. (U) Current Change Explanations --

(Ch-1) The current estimate of schedule milestone dates were revised based upon approved Acquisition Program Baseline dated January 30, 1996. These milestones are no longer being tracked. The following milestones changed.

Dem/Val Prototype Flight Test Program Start from Nov 95 to N/A.
 Dem/Val Prototype Flight Test Program Complete from Oct 01 to N/A.
 Award EMD Contract from Nov 01 to N/A.
 T800 Engine Production Contract Award from Nov 04 to N/A.
 IOT&E Training/ARTEP Start from Jan 05 to N/A.
 IOT&E Training/ARTEP Complete from Aug 05 to N/A.
 First Air Vehicle Production Delivery from Jul 06 to N/A.
 RAM Validation Start from Nov 95 to N/A.
 RAM Validation Complete from Jul 06 to N/A.
 Air Vehicle Production Contract Award (LRIP) from Nov 04 to N/A.

(Ch-2) Milestone revised from N/A to actual date of occurrence based

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

upon approved Acquisition Program Baseline dated January 30, 1996.

(Ch-3) The Current Estimate of Milestone dates have been added based upon approved Acquisition Program Baseline dated January 30, 1996.

Initiate Assembly of EOC Aircraft Nov 99.
Updated to Preproduction Configuration Sep 04.
Depot Support Date Jul 06.
Organic Support Date Jul 09.

d. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

Approved Acquisition Program Baseline dated January 30, 1996.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
RAH-66 Aircraft Weight						
Empty Weight (lbs)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Primary Mission	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Gross Weight (PMGW - lbs)						
Flight Performance (Primary Mission):						
RAH						
Vertical Rate of Climb (VROC) (Feet per Minute (FPM), @ 4000 ft, 95 F & PMGW & 97.5% MRP)	500	1418	/ 500	TBD	860	

(b)(1)

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

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Digitally Exchange Battlefield Information to Joint & Combined Arms Forces	N/A	YES	/ YES	TBD	YES	(Ch-3)
Multifunctional Launch Stations ATGM, ATAM, Rockets (Internal)/ Turret Gun System	N/A	6/1	/ 6/1	TBD	6/1	(Ch-3)
Dash Speed, Knots @ 4000 ft/95 deg F @ IRP	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Turn to Target (sec) Single Engine	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Operation, Knots @ CRP 100 FPM Rate of Climb	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Crashworthiness (Vertical Impact Velocity, FPS)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)

(b)(1)



Engagement Range:						
Day (.9 Ph) (km)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Night (.9 PH) (km)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Reliability:						
Mean Time Between Essential Maintenance Action (MTBEMA)(hrs)	4.5	4.5	/ 4.5	TBD	4.5	(Ch-2)
Mean Time Between Mission Affecting Failure (MTBMAF) (hrs)	8.4	8.5	/ 8.5	TBD	8.5	(Ch-2)

Comanche (RAH-66), December 31, 1995

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

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Operational						
Availability (Ao) (percent):						
Wartime	N/A	78	/ 75	TBD	78	
Peacetime	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Maintainability:						
Mean Time To Repair (MTTR) (hrs)	1.0	0.86	/ 1.0	TBD	.86	
Maintenance Manhours per flight hr (MMH/FH) @ User Level	2.8	2.6	/ 2.6	TBD	2.6	
Payload RAH Hellfire:						
Internal Missile Capacity	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
External Missile Capacity	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Gun Ammo Capacity (rounds)	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Refuel/Rearm (no. of personnel-time (mins))	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Air Transportability						
Time to Load/Unload (min)						
C-5A	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
C-130	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Flight Performance (Primary Mission):						
RAH						
Engine Size, Intermediate Rated Power at Sea Level Standard	N/A	N/A	/ N/A	TBD	N/A	(Ch-1)
Self Deployable (NM) w/ 30 min. reserve	1260	N/A	/ N/A	TBD	N/A	(Ch-1)
EMI/EMP Protection (Volt/M)				TBD	N/A	(Ch-1)

At the direction of the Joint Requirements Oversight Council (JROC), the Performance Characteristics of: Radar Cross Section; Night Hot Target and Digitally Exchange Battlefield Information to Joint & Combined Arms Forces are being reevaluated by the User. A revised APB will be submitted upon approval by the JROC.

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

b. (U) Previous Change Explanations --

Utility/Attack design excluded from refocused program. MTBMAF and MTTR revised to reflect changes in Reliability, Availability and Maintainability (RAM) rationale report. MMH/FH revised from 2.8 to 2.6 hours to reflect results of RAM data analysis. PMGW weapon load increased from 4 to 6 missiles to reflect analysis of Comanche Milestone I Cost and Operational Effectiveness Analyses (COEA). Engine size changed from 1200 to 1233 due to initial testing of T800 engine. MTBEMA changed from 4.5 to 5.1 and MTBMAF from 8.5 to 9.5 to reflect program goals instead of thresholds. Dash Speed estimate adjusted from 180 knots to 170 knots to reflect Dem/Val phase design trade-offs. VROC changed from 500 to 860 to reflect the Armed Reconnaissance Mission Configuration Requirement which does not contain the Longbow Fire Control Radar.

c. (U) Current Change Explanations --

(Ch-1) Current estimate of performance characteristics have been revised based upon approved Acquisition Program Baseline dated January 30, 1996. These characteristics are no longer being tracked and may be deleted in future SARs. These characteristics have changed.

Empty Weight (lbs) from 7765 to N/A
Primary Mission Gross Weight (PMGW - lbs) from 10595 to N/A.
Dash Speed, Knots @ 4000 ft/95 deg F @ IRP from 175 to N/A.
Turn to Target (sec) from 4.7 to N/A.
Single Engine Operation, Knots @ CRP 100 FPM from 40 to N/A.
Climb Rate (Vertical Impact Velocity - FPS) from 38 to N/A

(b)(1)

Operational Availability Peacetime (percent) from 87 to N/A.
Payload RAH Hellfire Internal Missile Capacity from 6 to N/A.
Payload RAH Hellfire External Missile Capacity from 8 to N/A.
Gun Ammo Capacity (rounds) from 500 to N/A.
Refuel/Rearm (no. of personnel-time (mins)) from 3-15 to N/A.
Air Transportability Time to Load/Unload (min) C-5A from 20 to N/A.
Air Transportability Time to Load/Unload (min) C-130 from 22 to N/A.
Engine Size, Intermediate Rated Power at Sea Level Standard from 1400 to N/A.

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

Self Deployable (NM) w/ 30 min reserve from 1260 to N/A.

EMI/EMP Protection (Volt/M) from 200 to N/A.

(Ch-2) The Current Estimate of Performance Characteristics revised in accordance with approved Acquisition Program Baseline dated January 30, 1996. The following were changed.

Mean Time Between Essential Maintenance Actions (MTBEMA) (hrs) from 5.0 to 4.5.

Mean Time Between Mission Affecting Failure (MTBMAF) (hrs) from 9.8 to 8.5.

(Ch-3) The current estimate of these Performance Characteristics were added as a result of the approved Acquisition Program Baseline dated January 30, 1996. They are

(b)(1)

Digitally Exchange Battlefield Information to Joint & Combined Arms Forces Yes.

Multifunctional Launch Station ATGM, ATAM, Rockets (Internal)/Turret Gun System 6/1.

d. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

Approved Acquisition Program Baseline dated January 30, 1996.

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

a. (U) Cost --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	1756.2	4683.8	5344.2
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 84 Base-Year \$	1756.2	4683.8	5344.2

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

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	376.8	2428.0	2632.4
Development (RDT&E)	(376.8)	(2428.0)	(2632.4)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2133.0	7111.8	7976.6

Note: Development Cost in the Current Estimate includes \$384.3 million in Base Year 84 dollars for the Comanche Longbow Fire Control Radar (FCR). The Approved Program does not include the Longbow FCR.

b. (U) Quantity --

Development (RDT&E)	0	6	6
Procurement	0	N/A	0
Total	0	6	6

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

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

AMC Approved Acquisition Strategy (December 16, 1985).

(U) Approved Program:

Approved Acquisition Program Baseline dated January 30, 1996.

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12. (U) Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2133.0	0.0	0.0	2133.0
Previous Changes:				
Economic	+223.7	-	-	+223.7
Quantity	-	-	-	-
Schedule	+265.4	-	-	+265.4
Engineering	+455.4	-	-	+455.4
Estimating	+4034.3	-	-	+4034.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+4978.8	-	-	+4978.8
Current Changes:				
Economic	-277.6	-	-	-277.6
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	699.4	-	-	+699.4
Estimating	443.0	-	-	+443.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+864.8	-	-	+864.8
Total Changes	+5843.6	-	-	+5843.6
Current Estimate	7976.6	-	-	7976.6

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

a. (U) Summary (FY 1984 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	1756.2	0.0	0.0	1756.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+145.2	-	-	+145.2
Engineering	+301.3	-	-	+301.3
Estimating	+2481.1	-	-	+2481.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+2927.6	-	-	+2927.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	384.3	-	-	+384.3
Estimating	276.1	-	-	+276.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+660.4	-	-	+660.4
Total Changes	+3588.0	-	-	+3588.0
Current Estimate	5344.2	-	-	5344.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices
 Schedule: Revised estimate for restructured program.
 Engineering: Revised estimate for LH Longbow Development.
 Estimating: Refined estimate for revised acquisition strategies to reflect varying competitive development time and prototype fly-off alternatives. Revised estimate to exclude Assault/Utility design. Revised estimate to include total program (FY93 through FY96). Revised estimate to reduce length and scope of Demonstration/Validation effort. Revised estimate of competitive T800 program. Revised estimate of LH development testing, and LH

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

prototypes. Revised estimate for restructured Demonstration/Validation program. Revised estimate for restructured Demonstration/Validation phase and Engineering and Manufacturing Development. Revised estimate to incorporate Comanche Acquisition Streamline Program. Revised estimate to continue Dem/Val phase and add six aircraft for user evaluation

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-277.6
Adjustment for Current and Prior Inflation. (Estimating)	+15.3	+21.5
Addition of Comanche Longbow Fire Control Radar (FCR) (Engineering)	+384.3	+699.4
Revised Estimate of Comanche Early Operational Capability Program (Estimating)	+260.8	+421.5
RDT&E Subtotal	<u>+660.4</u>	<u>+864.8</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

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

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

a. (U) RDT&E --	Initial Contract Price		
(U) <u>Dem/Val Prototype:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Boeing Sikorsky JPO, Philadelphia, PA			
DAAJ09-91-C-A004, CPIF/AF	\$1956.2	N/A	0
Award: April 12, 1991			
Definitized: April 12, 1991			
	Estimated Price At Completion		
	<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price			
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
\$2172.9	N/A	0	\$2172.9
			\$2228.8

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

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-33.8	\$-16.9
Cumulative Variances To Date (12/31/95)	<u>\$-35.9</u>	<u>\$-14.2</u>
Net Change	\$-2.1	\$2.7

Explanation of Change:

Schedule performance was driven by delivery of material required for the assembly of aircraft #1. This was partially offset by delays in materials for testing and to support first flight of aircraft #1.

Cost performance is due to design changes, analysis, tool design and fabrication, assembly and testing of the aircraft #1.

(U) <u>TS00 Growth AVS:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LHTEC, St. Louis, MO			
DAAJ09-92-C-0453, CPFF	\$208.3	N/A	0
Award: April 13, 1992			
Definitized: January 5, 1993			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$203.6	N/A	0	\$202.3	\$203.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$3.2	\$-2.1
Cumulative Variances To Date (12/31/95)	<u>\$4.6</u>	<u>\$-3.5</u>
Net Change	\$1.4	\$-1.4

Explanation of Change:

Schedule performance improvement was driven by material characterization studies, material deliveries and component testing to get ready for Critical Design Review for the Growth Engine. The Air Vehicle Support portion of the contract, in support of the Comanche Air Vehicle, continues to be on schedule. The Cost performance improvement in both portions of the contract is the result of manpower efficiencies and overall positive labor rates.

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

a. (U) Program Status --

- (1) Percent Program Completed: 50.0% (13 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 41.0% (\$3267.1 / \$7976.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY84-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2009)	<u>Total</u>
RDT&E	2976.2	290.9	288.6	4420.9	7976.6
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	2976.2	290.9	288.6	4420.9	7976.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

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

1984				1.0	1.0	1.0	1.0	3.8
1985				67.7	71.3	71.3	70.8	3.4
1986				98.7	107.0	106.9	106.9	2.8
1987				123.4	137.6	137.6	137.6	2.7
1988				109.9	127.1	127.1	126.9	3.0
1989				147.2	177.0	177.0	176.9	4.2

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Comanche (RAH-66), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1990				216.0	270.2	268.9	268.7	4.1
1991				259.8	338.3	338.3	337.5	4.3
1992				381.4	509.3	508.8	507.6	3.0
1993				291.3	397.3	393.3	391.8	2.4
1994				262.7	365.2	365.1	364.2	2.0
1995				334.7	474.9	474.8	423.6	1.9
1996				200.6	290.9	137.8	24.9	2.0
1997				194.8	288.6			2.2
1998				190.6	288.8			2.2
1999				248.0	384.2			2.3
2000				287.0	454.3			2.2
2001				371.9	601.6			2.2
2002				393.1	650.0			2.2
2003				384.7	650.0			2.2
2004				243.2	420.0			2.2
2005				214.2	378.0			2.2
2006				145.2	262.0			2.2
2007				80.8	149.0			2.2

*** UNCLASSIFIED ***

Comanche (RAH-66), December 31, 1995

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

Fiscal Year	Qty	Flyaway FY84 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

2008				56.8	107.0			2.2
2009				39.5	76.0			2.2
Subtot	6			5344.2	7976.6	3107.9	2938.4	
Grand Total	6			5344.2	7976.6	3107.9	2938.4	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

N-19 SSN 21 / AN/BSY-2

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(06A)823)
PROGRAM: SSN 21 CLASS/BSY-2

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
HIGH SPEED NUCLEAR ATTACK SUBMARINE & COMBAT SYSTEM

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

SEAWOLF PROGRAM MANAGER
NATIONAL CENTER 3, ROOM 7N24
FMS350
ARLINGTON, VA 22242-5168

CAPT P.E. SULLIVAN
Assigned: February 24, 1995
AV 332-7201 COMM 703-602-7201

AN/BSY-2 SCS PROGRAM MANAGER
National Center 2, Room 11W88
FMD418
Arlington, VA 22242-5168

CAPT R.B. COOK
Assigned: October 27, 1995
AV 332-0056 COMM 703-602-0056

AS AMENDED

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96-C-0399

SSN 21 CLASS/BSY-2, December 31, 1995

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

TITLE:

PE 0604567N, 0603561N, 0603562N, 0603569N, 0603570N, 0604561N
PE 0604524N (Shared) Project S1347, F1941

PROCUREMENT:

APFN 1611 ICN 0204281N (Navy)
APFN 1810 ICN 0204283N (Navy) (Shared)
APFN 1810 ICN 0804731N (Navy) (Shared)
APFN 1810 ICN 0204281N (Navy) (Shared)

MILCON:

PE 0204896N, 0804731N (Shared)

5. (U) Related Programs:

PE 63560N, PROJECT S0222 SUBMARINE HULL ARRAY DEVELOPMENT (ADV)
PE 63569N, PROJECT S1974 ADV SUB TECH
PE 64502N, PROJECT S0742 SUBMARINE INTEGRATED ANTENNA SYSTEM
PE 64502N, PROJECT S1411 SUBMARINE TACTICAL COMMUNICATION SYSTEM
PE 64520N, PROJECT S0198 SUBMARINE HULL ARRAY DEVELOPMENT (ENG)
PE 64562N, PROJECT S0236 SUBMARINE TACTICAL WARFARE SYSTEMS
PE 63367N, ANTI-SUBMARINE WARFARE STANDOFF WEAPONS
PE 25632N, PROJECT V0366 MK 48 ADVANCED CAPABILITIES TORPEDO
PE 24229N, TOMAHAWK
PE 64601N, SUBMARINE LAUNCHED MOBILE MINE
PE 64503N, PROJECT S0219 SUBMARINE SONAR IMPROVEMENT
PE 64507N, PROJECT V1440 ENHANCED MODULAR SIGNAL PROCESSOR
PE 64514N, NAVIGATION SYSTEMS
PE 63560N, SUBMARINE HULL ARRAY DEVELOPMENT
PE 64515N, SUBMARINE SURVEILLANCE EQUIPMENT
PE 63530N, OVER-THE-HORIZON EQUIPMENT
PE 78017N, HARPOON

6. (U) Mission and Description:

The SEAWOLF submarine will be a multi-mission vessel that will introduce unprecedented performance capabilities. It will be the quietest, most heavily-armed attack submarine the Navy has ever built. The design of the SEAWOLF is based on an extensive research and development program and will incorporate technological advancements to provide: order of magnitude improvement in ship quieting; improved acoustic sensors; more capable combat systems; greater weapon capacity and capability; quieter launch; weapon launch at high ship speed; advanced reactor; improved performance machinery program; an advanced propulsor; increased operating depth; improved ship control; and enhanced survivability.

The SEAWOLF will have eight large-diameter torpedo tubes, and will hold significantly more weapons than any other U.S. nuclear attack submarine. A stronger hull material will enable deeper dives. In addition, the vessel will be configured for operation in Arctic

SSN 21 CLASS/BSY-2, December 31, 1995

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

areas.

The AN/BSY-2 Submarine Combat System supports the SSN 21 mission to conduct prompt and sustained combat operations. The AN/BSY-2 Submarine Combat System improves upon existing combat systems to meet the expanded operational requirements of attack submarines in countering the future threat. The AN/BSY-2 Submarine Combat System provides combat control and acoustic functions to support the ship characteristics of the SSN-21. The warfare tasks supporting this mission are: Strike Warfare, Anti-Submarine Warfare (ASW), Surveillance/Indication and Warning, Anti-Surface Warfare, Mine Warfare, Special Warfare; Ocean Surveillance, Intelligence/Reconnaissance, Command, Control, and Communication (C3), Electronic Warfare, support of battle group operations, and Naval Special Warfare.

7. (U) Program Highlights:

- a. (U) Significant Historical Developments --
- 81 - An original Submarine Combat System program (SUBACS) was initiated.
 - Jun 82 - GROUP TANGO was established to assess the need for an advanced technology submarine.
 - Dec 82 - CNO directed NAVSEA to proceed with feasibility studies.
 - Jun 83 - SECNAV approved the SSN 21 conceptual design.
 - Jun 84 - SECDEF Decision Memorandum authorized the Navy to proceed with the SSN 21 Class preliminary design phase.
 - May 85 - Preliminary design phase completed.
 - Early 1986 - AN/BSY-2 design definition began with the award of contracts to RCA and IBM.
 - Oct 86 - Milestone I (AN/BSY-2) approval.
 - Oct 86 - Detail design was authorized.
 - Apr 87 - Newport News Shipbuilding (NNS) obtained the lead design yard contract.
 - Mar 88 - Original Program Baseline Document was approved.
 - Mar 88 - Milestone II (AN/BSY-2) approval.
 - Mar 88 - The AN/BSY-2 awarded General Electric (GE) a Full Scale Development (FSD) contract.
 - Dec 88 - The AN/BSY-2 Limited Production (LP) option for SSN 21 system exercised.
 - Jan 89 - Electric Boat (EB) was awarded the SSN 21 construction contract.
 - Oct 89 - SSN 21 construction commenced.
 - Jan 91 - A combined SSN 21 and AN/BSY-2 program review was held with the DAB. LRIP approved in February 1991.
 - May 91 - EB was awarded SSN 22 construction. NNS filed suit.
 - Jul 91 - The U.S. District Court Eastern District, VA declared SSN 22 construction contract void.

SSN 21 CLASS/BSY-2, December 31, 1995

7a. (U) Program Highlights (Cont'd):

- Jan 92 - The SSN 21/AN/BSY-2 program was truncated after lead ship. The proposed rescission package zeroed all FY 93 and outyear funding.
- Jun 92 - Public Law 102-298 reinstated the SSN 22. Contractors' stop work orders and terminations Request for Equitable Adjustments (REA) began to be submitted.
- Jun 92 - SSN 22 ship construction stop work order was lifted.
- Jul 92 - The U.S. District Court dismissed the case.
- Sep 92 - SSN 22 construction commenced.
- Sep 92 - An AN/BSY-2 program replan was executed to adjust the GE FSD/LP contract due to SEAWOLF Program truncation.
- Nov 92 - EB submitted a REA for the SSN 22 stop work period.
- Sep 93 - Settled SSN 22 REA for \$42M with a 12 month delay.
- Nov 93 - Received direction to upgrade the second AN/BQG-5 to a full-up shipset, procure a third system, and develop Full Search Capability.
- Dec 93 - AN/BQG-5 hardware delivered to SSN 710.
- Feb 94 - Last major hull section for the SSN 21 was shipped from EB's Quonset Point, RI, facility to EB Division Groton, CT.
- May 94 - Pressure Hull Erect was achieved for SSN 21.
- May 94 - AN/BQG-5 completes at-sea performance evaluation (PERFEVAL).
- May 94 - The SSN 21 Class/BSY-2 Acquisition Program Baseline was approved. Revision reflects the third ship and incorporates Artic Mission Measures of Effectiveness.
- Aug 94 - AN/BSY-2 Program Replan implemented to definitize Stop Work Request for Request for Equitable Adjustment (REA).
- Aug 94 - Congress placed a Shipbuilding and Conversion, Navy cost cap on the SSN 21 and SSN 22.

b. (U) Significant Developments Since Last Report --
SSN 21

- Dec 94 - SSN 22 Reactor Compartment, Section 6, was shipped from Quonset Point to Groton.
- Jan 95 - SEAWOLF Executive Oversight Committee (EXCOM) is established to provide oversight and senior management attention on the SEAWOLF Program to deliver the lead ship and assure compliance with the cost cap.
- Jan 95 - Sonar Dome installation on the SSN 21 was completed.
- Feb 95 - Propulsor installation was completed and Pre-waterborne Alignment of the Main Propulsion Unit was completed on the SSN 21.
- Apr 95 - Float-off of the SSN 21 was accomplished.
- May 95 - AN/BSY-2 system completed System Design Certification Test (SDCT 1) with a successful 120 hour longevity test.
- Jun 95 - Initial design was completed for the SSN 21 Class.
- Jun 95 - SSN 21 Ceremonial Launch was held.
- Aug 95 - Completed Post Core Hot Ops for the SSN 21 Propulsion

SSN 21 CLASS/BSY-2, December 31, 1995

7b. (U) Program Highlights (Cont'd):

Plant.

- Nov 95 - Completed Power Range Testing of SSN 21 Propulsion Plant
- Dec 95 - SSN 23 Appropriated, Construction started at Quonset Point facility.

AN/BSY-2

- Mar 95 - Delivery of SSN 21 shipset for installation at General Dynamics/Electric Boat Shipyard, Groton.
- May 95 - AN/BSY-2 Material Support Date (MSD) reached.
- Jun 95 - System Design Certification Test 1 (SDCT-1) complete.
- Jul 95 - Initial Software delivered to SSN 21, system lightoff achieved on 15 July with tactical training commencing the same day.
- Sep 95 - Crew training is successfully accomplished using On Board Training (OBT).
- Oct 95 - Consolidated Shore Facility (CSF) is operational and is used to augment SDCT-2 integration and test assets.
- Dec 95 - AN/BSY-2 Program Operation and System Support (POSS) contract awarded to Lockheed Martin Corporation.

THIS SYSTEM WILL SATISFY MISSION REQUIREMENTS.

c. (U) Changes Since As Of Date --

- Feb 96 - SSN 21 and SSN 22 Congressionally mandated cost cap was rescinded. SSN 21, SSN 22 and SSN 23 cost cap was established.
- Feb 96 - Operational Control of the AN/BSY-2 system officially transfers from the Shipbuilder to SSN 21 ship's force.

8. (U) Threshold Breaches:

The Final Software Delivery date breached the approved Acquisition Program Baseline dated May 26, 1994. The Program Manager's change in current estimate for Final Software Delivery to Navy to May 96 will not impact the shipyard schedule. This schedule adjustment will not impact the Program Manager's Estimate At Completion and is included in all current program planning. A deviation report is being submitted to record this change. There are no Nunn-McCurdy unit cost breaches.

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9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
SSN-21 Submarine			
Program Initiated	JUL 82	N/A	JUL 82
Milestone I (DSARC I)	DEC 83	N/A	DEC 83
Milestone II (DSARC II)	JUN 85	N/A	JUN 85
FSD Contract Award	JUL 85	N/A	JUL 85
Milestone IIB (JRMB)	OCT 86	N/A	OCT 86
Milestone IIIA	JUN 88	JUN 88	JUN 88
First Production Contract Award	JAN 89	JAN 89	JAN 89
DAB Review	MAR 90	N/A	MAR 90
Delivery (First Ship)	MAY 95	MAY 96	AUG 96(Ch-1)

(b)(1) [Redacted]

(IMA) Ready for Operation			
Depot Maintenance Activity Ready for Operation	N/A	DEC 98	DEC 98
Assign Homeport for 2 Ship Class	N/A	NOV 95	NOV 95
Assign Intermediate Activity(IMA)	N/A	NOV 95	NOV 95
Assign Depot Maintenance Activity AN/BSY-2	N/A	NOV 95	NOV 95
System Design Definition Contract Award			
RCA Corporation	JAN 86	N/A	JAN 86
IBM Corporation	MAR 86	N/A	MAR 86
Milestone I (JRMB)	JUN 86	N/A	JUN 86
Milestone II	NOV 87	FEB 88	FEB 88
FSD Contract Award	JAN 88	N/A	MAR 88
Authorization for Limited Production (DAB)	DEC 89	N/A	DEC 89
Authorization for Limited Production (DAB)	DEC 91	N/A	JAN 91
Material Support Date (AN/BQG-5)	NOV 92	N/A	OCT 93
TECHEVAL (AN/BQG-5)	AUG 93	N/A	N/A
Material Support Date (AN/BSY-2)	NOV 93	N/A	MAY 95
Authorization for Limited Production (DAB)	DEC 93	N/A	N/A

(b)(1) [Redacted]

AN/BSY-2 TECHEVAL (DT IIE)	DEC 94	N/A	FEB 99
Complete TECHEVAL (DT III)	DEC 94	N/A	N/A

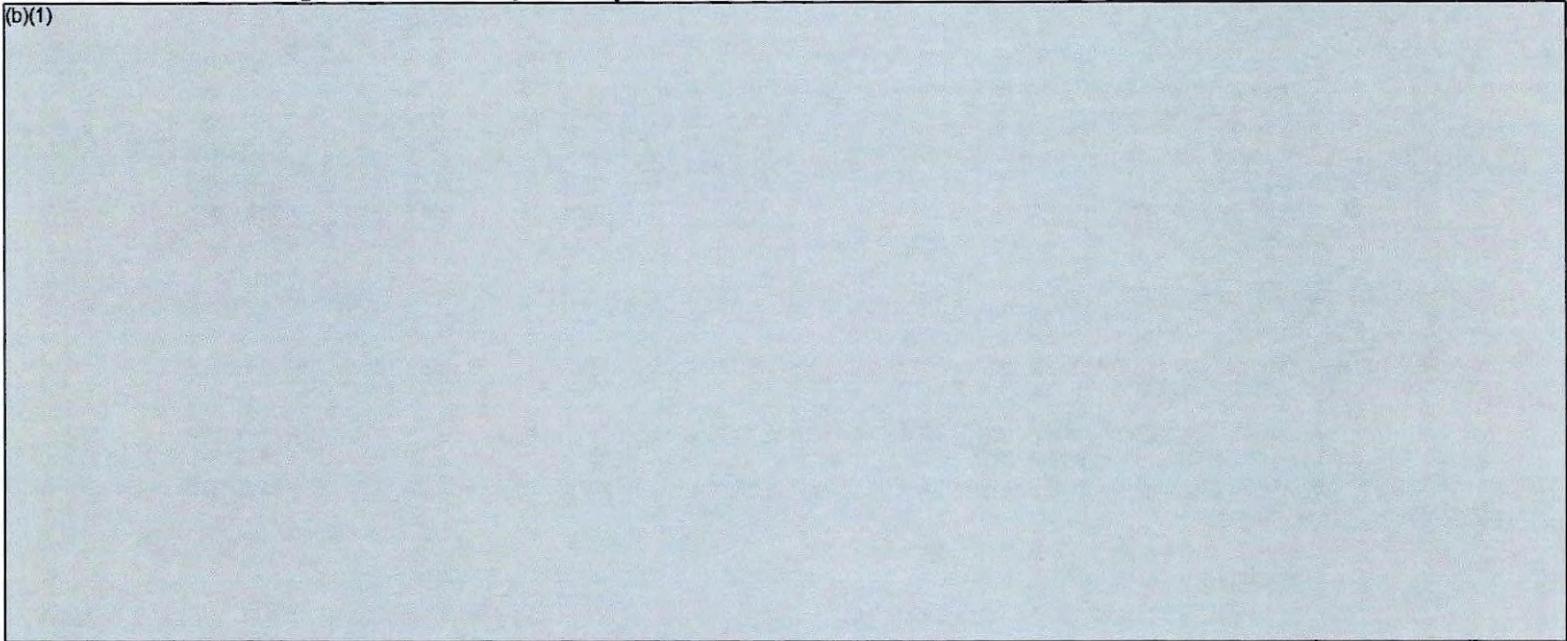
SSN 21 CLASS/BSY-2, December 31, 1995

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

(U) Milestones (Cont'd) --

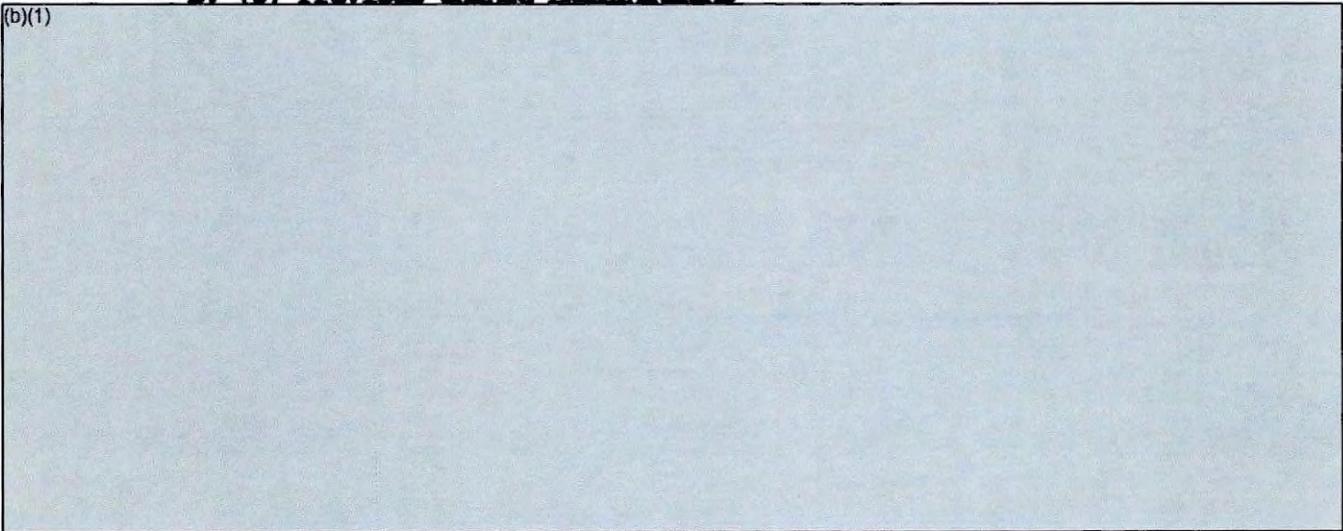
	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
AN/BSY-2 OPEVAL (OT IIC)	JUN 95	N/A	N/A
Complete OPEVAL (OT III)	JUN 95	N/A	TBD

(b)(1)



b. (U) Previous Change Explanations --

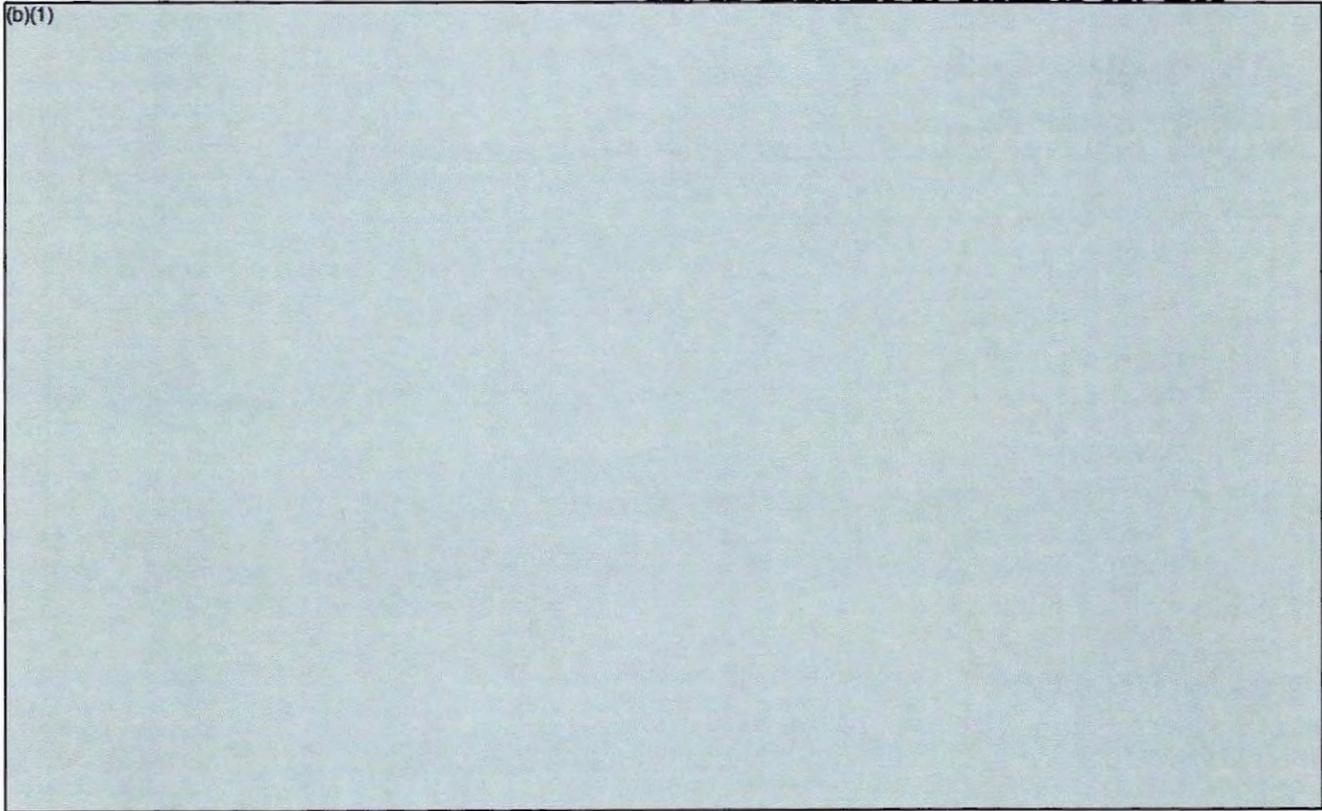
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AN/BSY-2

The FSD option was delayed two months to allow DOD Milestone II

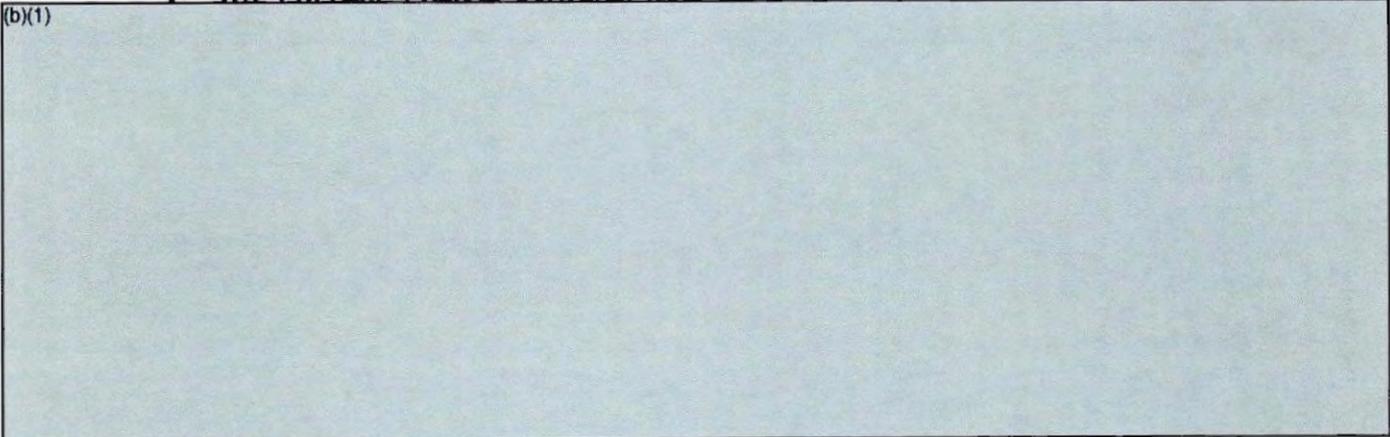
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CCAPS program has been terminated.

c. (U) Current Change Explanations --

(b)(1)



d. (U) References --

- (U) Production Estimate:
Production Estimates: DCP, SEAWOLF (SSN21) Class Submarine dated 11 May 1988.

SSN 21 CLASS/BSY-2, December 31, 1995

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

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

10. (U) Performance Characteristics:

a. (U) Performance —	<u>RfE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
SSN-21 Submarine				
Length (ft)	353	N/A / N/A	353	353
Beam Max (ft)	40	N/A / N/A	40	40
Draft Nav (ft)	34	N/A / N/A	TBD	34
Displacement (tons)	9150	N/A / N/A	TBD	9150

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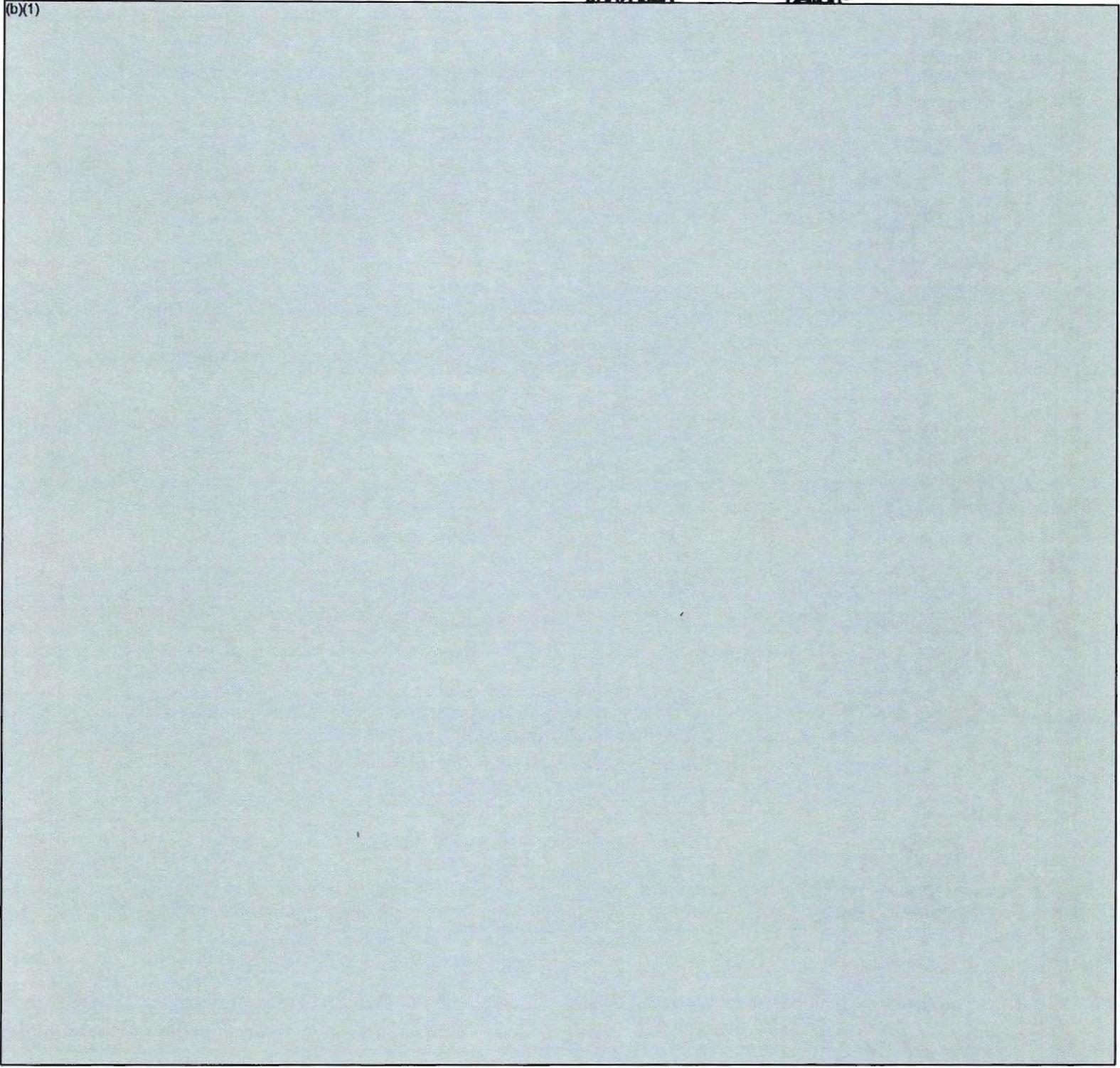
SSN 21 CLASS/BSY-2, December 31, 1995

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

Approved

Demon-

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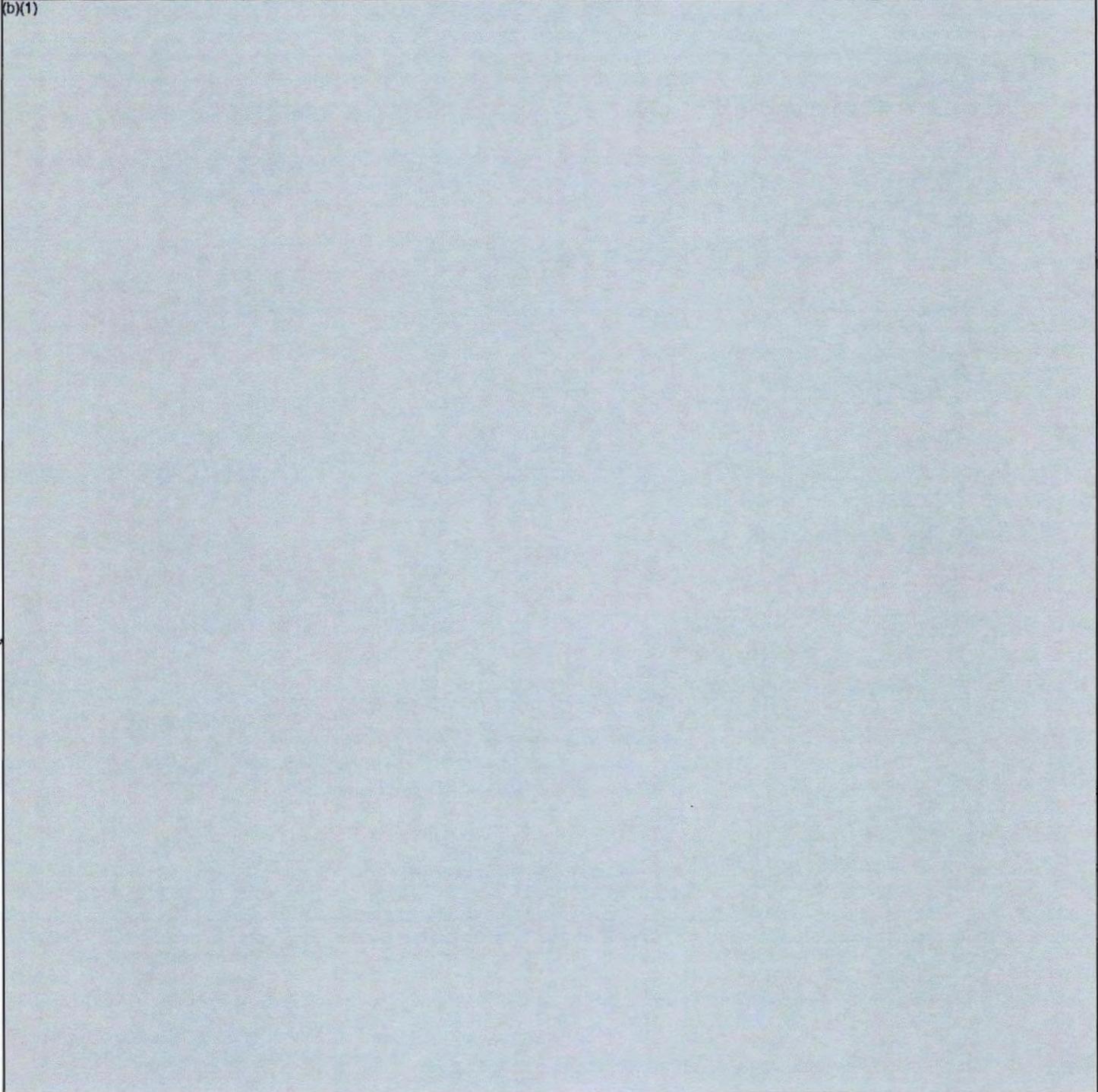
SSN 21 CLASS/BSY-2, December 31, 1995

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

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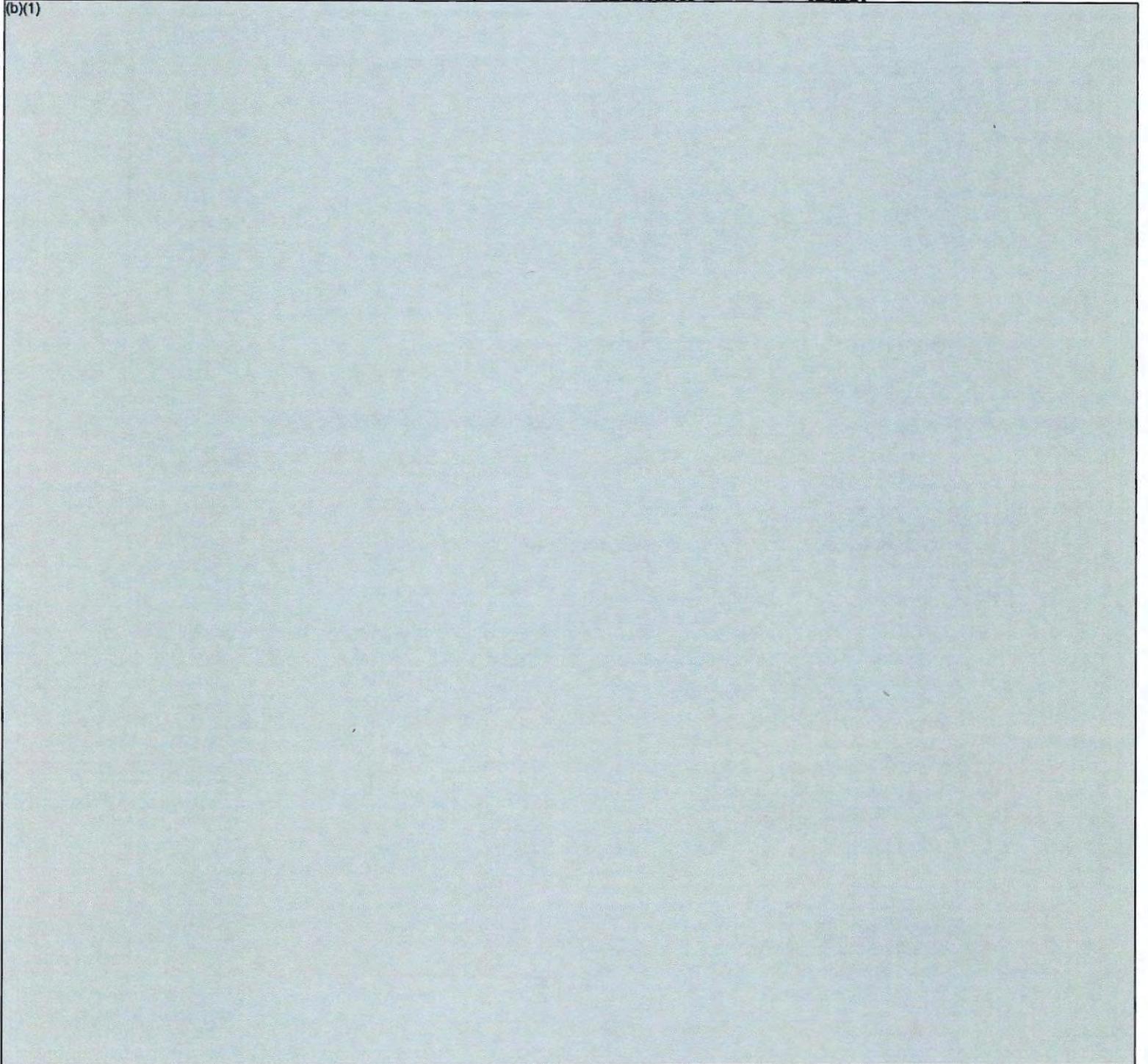
SSN 21 CLASS/BSY-2, December 31, 1995

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

Approved

Demon-

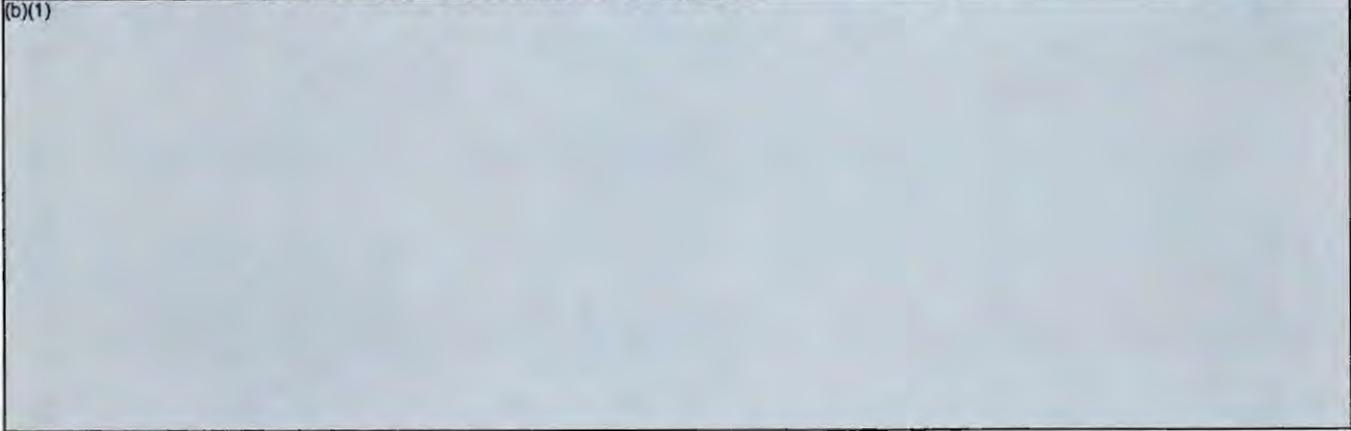
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10b. ~~SSI~~ Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --



c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

Production Estimates: DCP, SEAWOLF (SSN21) Class Submarine dated 11 May 1988.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

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

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	4335.0	4594.1	4621.6
Procurement	15686.3	7273.2	7554.5
Basic Ship Costs	(8083.6)		(4642.9)
GFE	(5952.8)		(2383.5)
Other Sailway	(111.0)		(87.6)
OF/PD	(570.2)		(163.5)
Total Sailway	(14717.6)		(7277.5)
OPN	(0.0)		(0.0)
AN/BSY-2 OPN	(968.7)		(277.0)
Total Other Wpn Sys	(968.7)		(277.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	98.6	27.5	25.1
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	20119.9	11894.8	12201.2

SSN 21 CLASS/BSY-2, December 31, 1995

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

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	1619.2	884.4	923.1
Development (RDT&E)	(-125.0)	(-19.5)	(-14.0)
Procurement	(1735.1)	(901.4)	(934.9)
Construction (MILCON)	(9.1)	(2.5)	(2.2)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total This-Year \$	21739.1	12779.2	13124.3

b. (U) Quantity —

Development (RDT&E)	0	0	0
Procurement	12	3	3
Total	12	3	3

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — \$1058.5M

e. (U) References —

(U) Production Estimate:

Production Estimates: DCP, SEAWOLF (SSN21) Class Submarine dated 11 May 1988.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>DCR Baseline</u> (MAY 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	12201.2	11894.8	
(2) Quantity	3	3	
(3) Unit Cost	4067.07	3964.93	2.58

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SSN 21 CLASS/BSY-2, December 31, 1995

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

	<u>Current</u> <u>Estimate</u>	<u>ICR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY90\$)	7554.5	7273.2	
(2) Quantity	3	3	
(3) Unit Cost	2518.17	2424.40	3.87

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13. (U) Cost Variance Analysis:

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

	RUT&E	PROC	MILCON	TOTAL
Production Estimate	4210.0	17421.4	107.7	21739.1
Previous Changes:				
Economic	-98.8	+514.5	+3.5	+419.2
Quantity	-	-15562.8	-	-15562.8
Schedule	-	+6354.0	-	+6354.0
Engineering	+144.8	-	-	+144.8
Estimating	+295.6	+612.5	-83.9	+824.2
Other	-	-	-	-
Support	+54.6	-860.6	-	-806.0
Subtotal	+396.2	-8942.4	-80.4	-8626.6
Current Changes:				
Economic	-14.6	-17.9	-	-32.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	16.0	35.1	-	+51.1
Other	-	-	-	-
Support	-	-6.8	-	-6.8
Subtotal	+1.4	+10.4	-	+11.8
Total Changes	+397.6	-8932.0	-80.4	-8614.8
Current Estimate	4607.6	8489.4	27.3	13124.3

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

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	4335.0	15686.3	98.6	20119.9
Previous Changes:				
Quantity	-	-12545.0	-	-12545.0
Schedule	-	+4369.6	-	+4369.6
Engineering	+127.8	-	-	+127.8
Estimating	+93.3	+717.8	-73.5	+737.6
Other	-	-	-	-
Support	+52.3	-687.4	-	-635.1
Subtotal	+273.4	-8145.0	-73.5	-7945.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	13.2	17.1	-	+30.3
Other	-	-	-	-
Support	-	-3.9	-	-3.9
Subtotal	+13.2	+13.2	-	+26.4
Total Changes	+286.6	-8131.8	-73.5	-7918.7
Current Estimate	4621.6	7554.5	25.1	12201.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Indices SSN21 and AN/BSY-2
 Engineering: Block Upgrade program added (AN/BSY-2)
 Cost estimate for transitioning from EMSP Standard Electronic Module (SEM) format B to SEM format E (AN/BSY-2)
 Estimating: Revised program requirements (SSN21)
 Refined cost estimates (SSN21)
 reduced lab tasking (AN/BSY-2)
 Partial funding for OPEVAL missile procurements (AN/BSY-2)
 Addition of Engineering Change Proposals
 Reinstatement of RDT&E

SSN 21 CLASS/BSY-2, December 31, 1995

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

Support: Reduction of prior year funding
AN/BSY-2 Stop Work Order
AN/BSY-2 Team Trainer tactical equipment
reprogrammed from FY91 OPN
LSA conversion reprogrammed from FY91 O&M,N

Procurement
Economic: Revised Indices
Quantity: Deletion of 3 systems in FY94 as a result of large
lot procurement (SSN21)
Addition of 3 systems (FY98-2, FY99-1)
Program Termination
Schedule: Restoration of SSN 22 (June 92)
3 systems in FY92 to FY93 (SSN21)
Change in acquisition strategy reflecting 75%
reduction in planned submarine construction
workload
Estimating: Refined Program Requirements and large lot
procurement savings (SSN21)
Refinement of estimates to reflect later
contract/pricing data (SSN21)
Reduction in quantity due to program termination
Reestimates for SCA process
Corrections to original recission data
Adjustment for current & prior year inflation
Support: Revised Outfitting and Post Delivery requirements
(SSN21)
FY91 AN/BSY-2 Team Trainer reprogrammed to ROT&E
(AN/BSY-2)
Revised cost estimates for Maintenance Trainers,
Team Trainer Tactical and Trainer Unique Equipment,
and associated spares (AN/BSY-2)
Addition of OPN costs
OF/PD Refined Cost Estimate
Program Termination
Two AN/BQG-5 Team Trainers (TTs) deleted (AN/BSY-2)
Revised test equipment and spares estimates
(AN/BSY-2)
Reduced SSF configuration and upgrades; reduced
Trainer Unique Equipment (TUE) for FY93 and FY94
(AN/BSY-2)
Deleted AN/BQG-5 Maintenance Trainer (MT), 2 TTs,
Intermediate Maintenance Activity (IMA) and
associated Maintenance Assistance Modules (MAMs)
and Associated Spare Parts Kits (ASPKs) (AN/BSY-2)
Deleted AN/BSY-2 MT #2, 2 TTs and spares, 2 new
Module Screening And Repair Activities (MSRAs) and
changed 2 new MSRAs to upgrades (AN/BSY-2)

SSN 21 CLASS/BSY-2, December 31, 1995

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

Reinstatement of OPN 93-99 budget
 Increase in OF/PD associated with reinstatement of
 SSN 22

MILCON

Economic: Revised Indices
 Estimating: Refined Program Requirements
 Program Termination
 Incorrect addition of Non-SEAWOLF specific project.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTEE</u>		
Revised escalation indices. (Economic)	N/A	-14.6
Adjustment for Current and Prior Inflation. (Estimating)	+7.0	+8.1
Cost refinement for software support (Estimating)	+10.3	+12.9
FY 95 actual update for MPR REA (Estimating)	+3.4	+4.0
Revised program direction (Estimating)	-8.3	-10.1
Shock Test (Estimating)	+0.8	+1.1
RDTEE Subtotal	<u>+13.2</u>	<u>+1.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-18.3
Economic adjustment for negative program change. (Economic)	N/A	+0.4
Adjustment for Current and Prior Inflation. (Estimating)	+2.7	+4.8
Reestimates for SSN 21 and SSN 22 SCA and SSN 23 (Estimating)	+7.6	+18.8
Revised Outfitting and Post Delivery requirements (Estimating)	+6.8	+11.5
Adjustment for Current and Prior Inflation. (Support)	+0.5	+0.5
Reestimates for Spares (Support)	-4.4	-7.3
Procurement Subtotal	<u>+13.2</u>	<u>+10.4</u>

SSN 21 CLASS/BSY-2, December 31, 1995

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1811.6	128.9	247.2	2118.0	48.3	291.8	—	-270.9	2563.3	4374.8

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

a. (U) RT&E --

(U) AN/BSY-2 FSD:
 LOCKHEED MARTIN CORP, SYRACUSE, NY
 N00024-88-C-6150, FPIF
 Award: December 11, 1987
 Definitized: December 11, 1987

Target	Initial Contract Price	
	Ceiling	Qty
\$965.5	\$1097.7	2

Current Contract Price		
Target	Ceiling	Qty
\$1052.4	\$1196.6	2

Estimated Price At Completion	
Contractor	Program Manager
\$1134.4	\$1135.5

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-25.3	\$-5.4
Cumulative Variances To Date (10/01/95)	\$-30.1	\$-1.8
Net Change	\$-4.8	\$3.6

Explanation of Change:

The unfavorable \$4.8M change in cost variance is primarily attributed to increased test and integration costs in Weapons Subsystem Integration, Core Integration, and BSY-2 System Design Certification Test (SDCT). The favorable \$3.6M change in schedule variance is primarily attributed to completion of software test milestones in Weapon Launch Display and Control, Weapon Launch Management, Workstation Database Manager, Common Combat Data Manager, Data Management Support, Workstations, and Signal Processing. Since the last SAR, the Program Manager's estimated price at completion and the Current Contract Target Price increased by \$0.1M due to various Engineering Change Proposal (ECP) activity.

Note: The initial and current contract prices and estimated prices at completion do not include the \$37.9M performance incentive fee pool. Option Items 0039, 0001-0018 and 0031 have been exercised and are included in the current contract prices.

SSN 21 CLASS/BSV-2, December 31, 1995

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

b. (U) Procurement --
 (U) SSN 21 CONSTRUCTION:
 GENERAL DYNAMICS, GROTON, CT
 N00024-89-C-2000, FPIF
 Award: January 9, 1989
 Definitized: January 9, 1989

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$1125.9	\$1378.1	1	\$1334.9	\$1388.5
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-121.3	\$-62.4
Cumulative Variances To Date (09/30/95)			\$-172.9	\$-61.4
Net Change			\$-51.6	\$1.0

Explanation of Change:

All numbers include anticipated escalation.

The Current Contract Ceiling Price is lower than the Program Manager's Estimate Price at Completion (PMEPAC) because the PMEPAC includes future contract changes.

The change in cost variance since last year is attributable to the following factors: material availability, labor hour performance (Outside Electricians, Outside Machinists, and Pipefitters, etc.), and the effects of the shrinking shipbuilding industry. The schedule variance reflects the volume of work remaining on the SSN 21. The Program Manager, Design Yards and the Shipbuilder continue to aggressively resolve design and material issues to support the construction program. As the SSN 21 approaches delivery, work arounds are more difficult. Work arounds are also hindered by the Congressionally mandated cost cap.

(U) SSN 21 (NUCLEAR):
 Westinghouse Elec Corp, Monroeville, PA
 N00024-87-C-4000, CPFF
 Award: November 7, 1986
 Definitized: November 7, 1986

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$252.1	N/A	0	\$252.1	\$252.1

SSN 21 CLASS/BSY-2, December 31, 1995

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

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

Explanation of Change: None.

The Navy has waived the cost/schedule control systems requirement for Naval Nuclear Propulsion Program procurements.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>SSN 21 (NUCLEAR):</u> Westinghouse Elec Corp, Schenectady, NY N00024-87-C-4001, CPFF Award: November 7, 1986 Definitized: November 7, 1986	\$88.0	N/A	0

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$299.9	N/A	0	\$299.9	\$299.9

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

Explanation of Change: None.

The Navy has waived the cost/schedule control systems requirement for Naval Nuclear Propulsion procurements.

	<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>SSN 22 CONSTRUCTION:</u> GENERAL DYNAMICS, GROTON, CT N00024-91-C-2902, FPIF Award: May 3, 1991 Definitized: May 3, 1991	\$610.2	\$758.3	1

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$897.3	\$1059.2	1	\$1013.2	\$1059.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-37.2	\$-17.5
Cumulative Variances To Date	\$-68.8	\$-63.8
Net Change	\$-31.6	\$-46.3

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

Explanation of Change:

All numbers include anticipated escalation.

The Current Contract Ceiling Price is lower than the Program Manager's Estimate Price At Completion (PMEPAC) because the PMEAC includes future contract changes.

The change in cost variance since last year is primarily attributed to the SSN 22 phasing based on SSN 21. The schedule variance is due to the hull sections being retained at Quonset Point to maintain essential trades to bridge to New Attack Submarine, thereby precluding achievement of planned schedule at Groton.

The SEAWOLF Class Detail Design Contract N00024-87-C-2046 is over 90% complete and will no longer be reported.

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

a. (U) Program Status --

- (1) Percent Program Completed: 72.7% (16 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 90.0% (\$11815.7 / \$13124.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY81-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2002)	Total
RDT&E	4286.3	122.7	110.9	87.7	4607.6
Procurement	6687.2	692.2	795.7	314.3	8489.4
MILCON	27.3	-	-	-	27.3
OGM	-	-	-	-	-
Total	11000.8	814.9	906.6	402.0	13124.3

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

c. (U) Annual Summary —

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

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

1981				20.7	15.2	15.2	15.2	10.6
1982				30.7	23.7	23.7	23.7	7.6
1983				29.9	24.1	24.1	24.1	4.9
1984				157.4	131.6	131.6	131.6	3.8
1985				334.1	288.1	288.1	288.1	3.4
1986				457.4	405.7	405.7	405.7	2.8
1987				435.9	398.1	398.1	396.8	2.7
1988				470.0	443.6	443.6	441.2	3.0
1989				519.3	510.8	508.2	508.2	4.2
1990				518.5	530.8	530.7	528.4	4.0
1991				517.3	548.6	547.7	518.6	4.3
1992				407.7	445.0	444.1	421.3	2.8
1993				157.9	176.3	176.2	175.9	2.7
1994				160.4	182.6	182.6	170.8	2.0
1995				139.6	162.1	161.2	110.4	1.9
1996				103.5	122.7	66.4	4.5	2.0
1997				91.3	110.9			2.2

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1998				39.4	48.8			2.2
1999				29.8	37.8			2.3
2000				0.8	1.1			2.2
Subtot				4621.6	4607.6	4347.2	4164.5	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987				376.4	375.0	375.0	364.6	1.5
1988				251.2	257.6	257.6	255.5	2.6
1989	1		2445.5	2158.3	2280.7	2140.1	2015.9	3.3
1990		354.7		539.2	586.3	586.3	556.8	1.1
1991	1	124.3	2130.1	1963.7	2199.1	1933.8	1425.7	1.6
1992		191.6		672.1	775.3	713.3	365.9	2.5
1993				2.1	2.4	2.4	2.4	3.2
1994				15.5	18.7	1.5	1.2	4.2
1995				11.0	13.6	6.4	1.3	3.8
1996	1		2031.3	543.4	687.4	42.4	6.9	2.0
1997				568.6	735.2			2.2
1998				85.3	112.7			2.2

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (\$)
		Nonrec	Resc		Program	Obligated	Ex-pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1999				33.3	45.0			2.3
2000				0.6	0.8			2.2
2001				1.9	2.7			2.2
2002				54.9	79.2			2.2
Subtot	3	670.6	6606.9	7277.5	8171.7	6058.8	4996.2	

Nonrecurring Flyaway includes \$670.6M for ships in FY 92, FY 93, and FY 94 which were not authorized.

Appropriation: 1810 Other Procurement, Navy

1989				0.6	0.6	0.6		4.2
1990				142.3	152.2	152.2	151.4	4.0
1991				17.7	19.3	19.3	16.2	4.3
1992								2.8
1993				0.4	0.4	0.4		2.7
1994				3.3	3.8	3.8	0.4	2.0
1995				1.9	2.2	1.6	0.3	1.9
1996				4.0	4.8			2.0
1997				49.2	60.5			2.2

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Ther-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1810 Other Procurement, Navy (Cont'd)

1998				24.1	30.3			2.2
1999				20.9	26.8			2.3
2000				6.0	7.9			2.2
2001				6.6	8.9			2.2
Subtot				277.0	317.7	177.9	168.3	

Appropriation: 1205 Military Construction, Navy

1991				25.1	27.3	19.0	13.0	4.3
Subtot				25.1	27.3	19.0	13.0	
Grand Total	3	670.6	6606.9	12201.2	13124.3	10602.9	9342.0	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date — 0/0.
- b. (U) Approved Design-to-Cost Objective — N/A.

18. (U) Operating and Support Costs:

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

a. (U) Assumptions and Ground Rules --

The O&S cost driving characteristics for the SEAWOLF Class are that each ship has a 30 year service life, displaces 9150 tons, has a crew of 134 officers/enlisted and a maintenance cycle which has 2 overhauls and 6 SRAS. There are 42 months between depot level availabilities. (The source for the cost information is the CAIG - Cost Analysis Improvement Group report dated 30 April 1990.)

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per SHIP	Avg Annual Cost Per SHIP
PERSONNEL	3.6	N/A
O&S CONSUMABLES	3.5	N/A
DIRECT DEPOT MAINTENANCE	20.2	N/A
OTHER DIRECT COSTS	3.7	N/A
INDIRECT COSTS	5.9	N/A
Total	36.9	N/A

c. (U) Contractor Support Costs -- None.

The SEAWOLF Program has no O&M or industrial fund contractor support costs.

AF-8 F-22

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: F-22

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
F-22

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

F-22 SYSTEM PROGRAM OFFICE	COL MICHAEL C. MUSHALA
AERONAUTICAL SYSTEMS CENTER	Assigned: January 17, 1996
WRIGHT-PATTERSON AFB	AV 785-4167 COMM (513) 255-4167
DAYTON, OH 45433-7003	

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

RDTE:

PE 0603109F (Shared)	Project 622273
PE 0603230F	
PE 0604227F (Shared)	Project 663143
PE 0604239F	
PE 0604250F (Shared)	Project 643389, 643393, 643786

SAF/PAS

96-055 -T

~~Classified by F-22 SPC 15 APR 90~~
~~Derived from: Not subject to automatic downgrading~~
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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 3010 ICN ATP000 (Air Force)

MILCON:

PE 0207219F, 0604239F

NOTE: PE 0604239F is the only RDT&E program element with funding after FY 91. PE 0207219F is the procurement program element. The other PEs are shown for information as they are included in the total program funding.

5. (U) Related Programs: None.

6. (U) Mission and Description:

The F-22 program will develop the next-generation air superiority fighter for introduction in the early 2000s to counter emerging proliferating world-wide threats. The F-22 is designed to penetrate enemy airspace and achieve a first-look, first-kill capability against multiple targets. F-22 Engineering and Manufacturing Development (EMD) is based on the Weapon System Specification formulated from data developed during the Demonstration/Validation (Dem/Val) phase. The EMD program consists of design, fabrication, and development testing of 13 EMD flight test vehicles (11 single and 2 dual seat); design, fabrication, development testing, and delivery of 39 EMD flight qualified engines; update of the Dem/Val Avionics Flying Laboratory into a Flying Test Bed for use in developing and integrating the EMD avionics suite; and design and development of F-22 support and training systems. The F-22 program from the outset has placed balanced emphasis on performance, survivability, reliability/maintainability, and affordability. The F-22 is characterized by a low observable highly maneuverable airframe, a new engine capable of supersonic cruise without using afterburner, and advanced integrated avionics.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Advanced Tactical Fighter (ATF) Demonstration/Validation phase involved two competing aircraft teams, led by Lockheed (with General Dynamics and Boeing as team members) and Northrop (teamed with McDonnell-Douglas), and two competing engine contractors, General Electric (GE) and Pratt & Whitney (P&W). Each aircraft team flew two prototype air vehicles--one with GE engines and the other with P&W engines. On 23 April 1991, the Secretary of the Air Force announced the winners of the ATF Engineering and Manufacturing Development (EMD) Source Selection: Lockheed Aeronautical Systems Company (LASC) for the air vehicle and overall weapon system integration and P&W for the engine. In conjunction with the selection, the ATF was redesignated the F-22. Milestone II approval

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7a. (U) Program Highlights (Cont'd):

was confirmed by an Acquisition Decision Memorandum (ADM), dated 1 August 1991, authorizing F-22 EMD and long lead procurement for four pre-production verification (PFV) air vehicles. EMD contracts were awarded to LASC and P&W on 2 August 1991. In December 1992, Lockheed Aeronautical Systems Group, parent company of LASC, acquired General Dynamics' Fort Worth Division, which was renamed Lockheed Fort Worth Company (LPWC). In FY93, a combination of government and contractor funding shortfalls led to a rephase of the F-22 program. This rephase reduced the number of EMD aircraft from eleven to nine and the number of engines from 33 to 27. In addition, the EMD program schedule slipped twelve months and the production program slipped one fiscal year. The Air Vehicle Preliminary Design Review (PDR) was completed on 30 April 1993. Further funding reductions led to a second rephase of the program in FY94, slipping the EMD and production programs an additional eight months. The Air Vehicle Critical Design Review (CDR) was conducted on 20-24 February 1995. A \$110M FY95 Congressional and \$200M FY96 Office of the Secretary of Defense budget reduction led to a third rephase of the F-22 EMD program. Schedule impacts from these reductions, which assume funding payback within the Future Year Defense Plan starting in FY98, slipped first flight 3 months, extended EMD test aircraft deliveries, and extended EMD program completion 6 months with commensurate slips in Milestone III, Initial Operational Capability and the production program.

b. (U) Significant Developments Since Last Report --

The third rephase of the Engineering & Manufacturing Development (EMD) program, caused by the \$110M FY95 Congressional and \$200M FY96 OSD budget reductions and cost growth, increased the total program cost approximately \$950M (\$693M attributed to budget reductions and \$257M to cost growth) and resulted in four breaches of schedule. Schedule breaches included completion of Development Test & Evaluation (from Mar 01 to Oct 01), Low Rate Initial Production First Delivery (from Sep 00 to May 01), Start of Dedicated Initial Operational Test & Evaluation (from Mar 01 to Oct 01) and High Rate Production Contract Award (from Apr 02 to Feb 03). The F-22 System Program Office submitted an amended Program Deviation Report and a Baseline Change Request, on 22 December 1995, as a result of the funding shortfall and the Air Force Chief of Staff directed F-22 Logistics Privatization Study (LPS). The LPS indicated budgeted organic depot investment was planned to begin 3 to 5 years before sufficient operational experience data would be available to fully justify such an investment. Consequently, the Air Force directed that organic depot be delayed 3 years past the originally planned start date of 2001 and that the program adjust appropriate budget requests accordingly. This direction required a baseline schedule change in Organic Depot Activation (from Dec 06 to Dec 09) with

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7b. (U) Program Highlights (Cont'd):

commensurate threshold changes.

The National Research Council completed its report on Live Fire Test (LFT) of the F-22 and recommended that Congress grant the Secretary of Defense authority to waive the requirement for full-up LFT. We understand action is underway to reintroduce legislation permitting the Secretary of Defense to waive the requirement post Milestone II. Though the report did not recommend a full-up test, it did suggest some changes to the current F-22 LFT program. We are currently incorporating these changes into the LFT plan and Test and Evaluation Master Plan.

Assembly of Air Vehicle (A/V) #4001, the first EMD vehicle, began in Fort Worth, TX, on 27 June 1995. Metrics used to monitor F-22 and F119 progress toward first flight have been developed and were initially reviewed at the program level during the September Program Management Review (PMR). In addition to monitoring the start and stop of each Integrated Master Schedule task associated with first flight, we are tracking a number of other metrics, including measures related to design, build, certification/qualification/flight clearance tasks, software and equipment deliveries. Metrics are reviewed bi-weekly by senior program officials.

On 7 September 1995, AFPEO/TA and SAF/AQ chaired a Strategic Roundtable, the first major step on the path to contracting for Pre-Production Verification (PFV) aircraft. Attendees, including OSD (S&TS), SAF/AQ and ACC/DR, received a strategic-level briefing on our approach for transitioning the F-22 from EMD to production. The briefing covered the impact of changes in the acquisition environment on our production strategy and the roadmap to the PFV contract. The next step in the process, a combined Tactical Roundtable and Acquisition Strategy Panel, is projected for February 1996.

In October 1994, we discovered an error in pressure distributions in the forward section of the inlet ducts. This forced us to revise airframe design loads and modify the affected structure to minimize flight test limitations. In order to preserve First Flight in May 1997, we implemented a block design approach in which the first two EMD test aircraft (Block 1) would be modified to regain static strength capability with service life reductions being a fall-out. The remaining aircraft (Block 2) will be modified to achieve full 8000 hour design life. To reduce cost and schedule impacts, Block 1 repairs were limited to parts having greater than 10% negative static margins and a further assessment was performed to determine if these aircraft would meet an acceptable flight test envelope. Our Test and Airframe Integrated Product Teams established an acceptable Block 1 flight test envelope which allows us to meet all EMD flight test

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7b. (U) Program Highlights (Cont'd):

requirements.

The strike by the Boeing International Association of Machinists, which began on 6 October 1995, was settled on 13 December 1995. Boeing performed superbly during the strike by using management personnel on the production floor to keep A/V #4001 component production on track. Although the wing and aft fuselage schedules supporting delivery of A/V #4001 have been protected, it appears that A/V #4002 and #4003 are approximately 57 and 56 manufacturing days behind, respectively, due to the strike. Planning is underway to minimize first flight impacts for these two aircraft.

The F-22 Training System Integrated Product Team defined options for a suite of training devices that will meet all functional requirements. Cost analyses were finalized and a media recommendation briefing was presented to ACC/DR in October 1995. Media recommendations were approved by ACC/DR, and Boeing is proceeding with requests for proposals to the training industry.

Endurance testing of the Initial Flight Release (IFR) F119 engine configuration began in November 1995. After 380 total accumulated cycles and 140 hours of engine operation, borescope inspection revealed the high pressure turbine blades endured extensive erosion. Data analysis identified a loss of cooling pressure to the high pressure turbine blades and root cause analysis is underway focusing on the design integrity of the turbine mini-disk. Endurance testing will resume in February 1996. In on-going testing, progress was made in a design approach to improve the high power compressor stall margin shortfall. Potential design modifications were tested in December with more testing to be done in February 1996. At this time, we do not see an impact in meeting our engine first flight need delivery schedules. The Initial Service Release configuration Hollow Fan Blade (HFB) vibratory verification test is scheduled for February 1996 to assess the reduced stress level on the first stage HFB. Along with recent inlet case tests at Arnold Engineering and Development Center and P&W, Florida, the demonstration of inlet guide vane changes and scheduling control logic, will confirm HFB performance capability for First Flight and allow us to eliminate the solid blade design contingency in February 1996. For engine test results see Section 7c. which follows.

The F-22 as currently planned will meet all mission requirements.

c. (U) Changes Since As Of Date --

As a result of strong support from senior USAF leadership, the F-22 program received a \$100M plus up in FY96 from Congress. The F-22 program was exempted from bills for Bosnia support and a portion of

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7c. (U) Program Highlights (Cont'd):

the assessment for Small Business Innovative Research. These actions resulted in a net increase to the FY96 Engineering Manufacturing and Development (EMD) funding of \$56M. This funding increase was used to offset funding the requirement for Rephase III from \$1260M to \$1204M.

Of the \$1204M total, \$1097M is funded in the FY97 President's Budget. The remainder to be funded in the FY98 Program Objective Memorandum.

Engine testing of the hollow fan blade showed that the inlet guide vane seal eliminated flutter and reduced vibratory stresses to acceptable levels. All flight test engines will have hollow fan blades. The F119 High Pressure Compressor Stall Margin shortfall analysis is focused on thermal induced distortions in the compressor/diffuser cases, resulting in non-uniform blade-to-case clearances and rubs. Engine FX625 was modified to incorporate mechanical design changes to compressor flange attachments and heat shields. These improvements proved to ensure an acceptable stall margin for stable unrestricted flight testing. The changes are being incorporated into the flight test engines within current schedules. Further modifications for improved stall margin in the Initial Service Release configuration are planned. The root cause of the High Pressure Turbine (HPT) mini-disk design deficiency discovered in December is attributed to a transient thermal mismatch between the mini-disk and the HPT disk snap fit. The HPT mini-disk has been redesigned for flight test to resolve its durability shortfall. A final Initial Flight Release design will be tested in April. All engine development issues identified to date have been resolved and the resolution demonstrated. The engine is on track for first flight in May of 1997.

There are several Air Vehicle components that have the potential to be Diminishing Manufacturing Resources (DMR) in the future. A majority of the currently identified parts are electronic components. A draft DMR plan has been developed and is currently being finalized. A Senior Level Review Team was also established with our prime contractors to develop the most cost effective program plan to mitigate the diminishing manufacturing resources challenge. DMR is a defense industrial base issue and not unique to the F-22 program. We are working with the contractor and government communities to mitigate the impact of DMR.

The decision was made to move the PPV funding from the 3010 to 3600 appropriation in accordance with USD(A&T) policy for funding low rate initial production articles dedicated to test. The F-22 SPO is currently revising the acquisition strategy. This change has no program cost or schedule impact.

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7c. (U) Program Highlights (Cont'd):

Lockheed Martin (LMAS) presented revised A/V #4001, #4002 & #4003 manufacturing schedules in Feb 96. A/V #4002 & #4003 schedules slipped 57 and 56 manufacturing days, respectively, due to impacts of the International Association of Machinists strike at Boeing. The revised schedules also incorporate the Block 2 loads fixes on the aircraft. AV #4001 is on track for first flight. The F-22 team continues to proactively identify and resolve manufacturing, development and other schedule issues and is on track to meet major program milestones.

8. (U) Threshold Breaches:

There are currently no Numm-McCurdy unit cost breaches, but, as noted in Sections 7 and 9 as well as the previous Selected Acquisition Report, the ongoing rephase of the EMD program will cause breaches in several schedule milestones in the Acquisition Program Baseline dated 11 September 1995. Breaches due to the rephase include Completion of DT&E, LRIP First Delivery, Start of Dedicated IOT&E, and High Rate Production Contract Award. We also report a schedule slip of our Organic Depot Activation as a result of the Air Force Chief of Staff directed Logistics Privatization Study. We submitted an Amended Program Deviation Request and Baseline Change Request in December 1995.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I (DSARC)	OCT 86	OCT 86	OCT 86
Dem/Val Contract Award (Airframe only)	OCT 86	OCT 86	OCT 86
Early Operational Assessment			
Start	OCT 86	OCT 86	OCT 86
Complete	MAR 91	MAR 91	MAR 91
System Requirements Review	MAY 87	MAY 87	MAY 87
System Design Review	NOV 89	NOV 89	NOV 89
Prototype First Flight	JUN 90	JUN 90	AUG 90
Milestone II (DAB)	JUN 91	JUN 91	JUN 91
EMD Contract Award	AUG 91	AUG 91	AUG 91
Preliminary Design Review Complete	OCT 92	APR 93	APR 93
Critical Design Review Complete	OCT 93	FEB 95	FEB 95
Engine Initial Flight Release	OCT 94	DEC 96	DEC 96
FPV Long Lead	JAN 95	AUG 96	FEB 97
First Flight	SEP 95	FEB 97	MAY 97
DT&E			

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

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Start	SEP 95	FEB 97	MAY 97
Complete	DEC 99	MAR 01	OCT 01
PFV Contract Award	JAN 96	SEP 97	FEB 98
Low Rate Initial Production (LRIP) Decision	OCT 96	JUN 98	NOV 98
Low Rate Production Contract Award	JAN 97	SEP 98	FEB 99
LRIP First Delivery	JAN 99	SEP 00	MAY 01
Dedicated IOT&E			
Start	JUN 99	MAR 01	OCT 01
Complete	SEP 99	NOV 01	APR 02
Milestone III	DEC 99	MAR 02	SEP 02
High Rate Production Contract Award	JAN 01	APR 02	FEB 03
Initial Operational Capability	TBD	MAY 04	NOV 04
Organic Organizational Maintenance Capability	TBD	MAY 04	NOV 04
Required Assets Availability (RAA)	OCT 02	MAY 04	NOV 04
Organic Depot Activation	TBD	JUN 06	DEC 09 (Ch-1)

b. (U) Previous Change Explanations --

Air Combat Command (ACC) determined the original Approved Program dates for Initial Operational Capability (OCT 02) and Organic Organizational Maintenance Capability (OCT 02). These were first reported in the December 1992 SAR.

The original Approved Program date for Organic Depot Activation (OCT 05), first reported in the December 1992 SAR, reflected the coordinated position of the F-22 SPO and the depot organization (SM-ALC).

The Current Estimates for Preliminary Design Review Complete through Required Assets Availability were updated in the December 1992 SAR to reflect the impacts of the 1993 program rephase.

The Approved Program dates for Critical Design Review Complete and all subsequent milestones were slipped eight months to reflect the impacts of the 1994 rephase. The Current Estimates in the December 1993 SAR accounted for these impacts.

Current Estimates for production-related milestones, beginning with PFV Long Lead, slipped four months in the December 1994 SAR, reflecting the FY96 Program Objective Memorandum's movement of the first F-22 production funding from FY96 to FY97.

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

Current Estimates reflected projected schedule breaches for Completion of DT&E, LRIP First Delivery, Start of Dedicated IOT&E and High Rate Production Contract Award, as shown in Section (9a), due to the impacts of the ongoing F-22 EMD program rephase. A Baseline Change Request with firm schedule estimates was submitted in December 1995.

c. (U) Current Change Explanations --

(Ch-1) Current Estimates reflect our best schedule estimates. As noted in Section 8, we identified a 3 year schedule slip for Organic Depot Activation based on the Air Force Chief of Staff Logistics Privatization Study recommendation and submitted a Baseline Change Request on 22 December 1995.

d. (U) References --

(U) Development Estimate:
Defense Acquisition Executive (DAE) approved Acquisition Program Baseline (APB), 3 February 1992.

(U) Approved Program:
Approved Acquisition Program Baseline dated September 11, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
-----------------------	----	--------------------------------------	-------------------	------------------

Combat Radius (at optimum altitude) (nm)



(#A/C)	*	*	/ *	TBD	**#
Radar Cross Section (RCS)					
Maneuverability (max power sustained G) (30000 ft) (mach)					

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

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate	
(b)(1)					
Radar Detection Range (RDR)	*	* / *	TBD	***	
Mean Time Between Maintenance (MTBM) (hrs)	3.0	3.0 / 3.0	TBD	3.2	
USD(A) Risk Assessment Items:					
Mission Effectiveness (Compared to current operational F-15 at time of IOT&E)	2	2 / 2	TBD	2###	
Direct on-and-off Maintenance Personnel (spaces)	8.7	8.7 / 8.7	TBD	8.30	(Ch-2)

(b)(1)

Fuel Consumption (specific fuel consumption)

(b)(1)

Warning Time *	*	* / *	TBD	***
Angle of Arrival (AOA) @ X Freq *	*	* / *	TBD	***

* Classification/control is beyond the level of this document.

Estimate reflects capability with a full primary mission load.

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

Current Estimate is better than threshold.

A mission scenario was assumed for estimating purposes. The current estimate will be updated when the scenario is refined.

USD(A) Risk Assessment Items are included here for consistency with the MS II APB. While these items may provide some insight to program maturity, they are not considered critical performance parameters, and, individually, should not be construed as good indicators of overall program health.

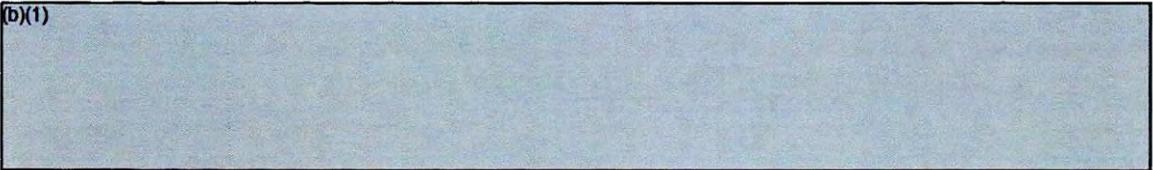
b. (U) Previous Change Explanations --

Current Estimates in the December 1992 SAR were set equal to the threshold values, as the program had just entered the development phase. Changes to the Current Estimates between December 1992 and December 1995 were based on development data not previously available.

c. (U) Current Change Explanations --

(Ch-1) Reflects changes to Subsonic Mission Radius and Supercruise Maneuverability in the Acquisition Program Baseline (APB) as of September 11, 1995.

(b)(1)



d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated 3 February 1992.

(U) Approved Program:

Approved Acquisition Program Baseline dated September 11, 1995.

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

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	16560.0	16560.0	18488.5
Procurement	5747.9	32566.1	32696.1
Total Nonrecurring			(238.8)
Peculiar Support	(1896.1)		(2401.9)
Initial Spares	(3851.8)		(2561.3)
Construction (MILCON)	200.0	200.0	136.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 90 Base-Year \$	22507.9	49326.1	51320.6
 Escalation	 76601.1	 23038.8	 18772.5
Development (RDT&E)	(2969.0)	(2969.0)	(2716.2)
Procurement	(73524.1)	(19961.8)	(15988.3)
Construction (MILCON)	(108.0)	(108.0)	(68.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	99109.0	72364.9	70093.1
 b. (U) Quantity --			
Development (RDT&E)	0	0	4
Procurement	648	442	438
Total	648	442	442

Note: Excludes 11 RDT&E prototypes from the SAR Baseline and 9 from the Current Estimate that are not considered fully configured.

Note: CCP 0015 (Rephase 1) reduced RDT&E prototypes from 11 to 9. SAF/AQ decision, in accordance with USD(A&T) policy, moved 4 Pre-Production Verification (PPV) articles from the Procurement appropriation to the RDT&E appropriation increases the total RDT&E prototypes from 9 to 13. Therefore, the procurement quantity is reduced from 442 to 438.

- c. (U) Foreign Military Sales/International Cooperative Programs -- None.
- d. (U) Nuclear Costs -- None.
- e. (U) References --

(U) Development Estimate:
DAE Approved APB dated 3 February 1992.

(U) Approved Program:
Approved Acquisition Program Baseline dated September 11, 1995.

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12. (U) Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	DCR Baseline (SEP 95 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY90\$)	51320.6	49582.2	
(2) Quantity	442	442	
(3) Unit Cost	116.11	112.18	3.51
b. (U) Procurement			
(1) Cost (BY90\$)	32696.1	32564.5	
(2) Quantity	438	442	
(3) Unit Cost	74.65	73.68	1.32

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13. (U) Cost Variance Analysis:

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

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	19529.0	79272.0	308.0	99109.0
Previous Changes:				
Economic	-222.0	-3848.7	-18.8	-4089.5
Quantity	-483.1	-21543.0	-	-22026.1
Schedule	+32.4	+2647.1	-	+2679.5
Engineering	+187.4	+103.5	+5.0	+295.9
Estimating	+480.4	+213.1	-106.4	+587.1
Other	-	-	-	-
Support	+2.4	-3037.2	-	-3034.8
Subtotal	-2.5	-25465.2	-120.2	-25587.9
Current Changes:				
Economic	-324.8	-5358.2	-17.1	-5700.1
Quantity	882.6	-469.8	-	+412.8
Schedule	1096.5	-	-	+1096.5
Engineering	-	-	-	-
Estimating	23.9	-114.1	33.3	-56.9
Other	-	-	-	-
Support	-	819.7	-	+819.7
Subtotal	+1678.2	-5122.4	+16.2	-3428.0
Total Changes	+1675.7	-30587.6	-104.0	-29015.9
Current Estimate	21204.7	48684.4	204.0	70093.1

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

a. (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	-424.1	-9891.2	-	-10315.3
Schedule	+17.0	+101.1	-	+118.1
Engineering	+146.6	+64.4	+4.0	+215.0
Estimating	+551.9	+65.5	-83.0	+534.4
Other	-	-	-	-
Support	+45.3	-1285.3	-	-1240.0
Subtotal	+336.7	-10945.5	-79.0	-10687.8
Current Changes:				
Quantity	705.9	-190.0	-	+515.9
Schedule	861.3	-	-	+861.3
Engineering	-	-	-	-
Estimating	24.6	-170.1	15.0	-130.5
Other	-	-	-	-
Support	-	491.7	-	+491.7
Subtotal	+1591.8	+131.6	+15.0	+1738.4
Total Changes	+1928.5	-10813.9	-64.0	-8949.4
Current Estimate	18488.5	32696.1	136.0	51320.6

Out year impact of FY96 OSD budget reductions to RDT&E account are not completely included in FY97 President's Budget profile. FY98-03 Program Objective Memorandum disconnect must be submitted to cover the remaining RDT&E shortfall.

b. (U) Previous Change Explanations --

RDT&E

- Economic: Revised economic escalation indices and economic adjustment for negative program change.
- Quantity: Deleted 2 EMD aircraft and 6 EMD engines due to FY 93 funding shortfall.
- Schedule: Program rephase resulting from FY 93 funding shortfall stretched development one year.
- Engineering: 1000 lb JDAM integration.

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

Estimating: Changes due to contractor specific configuration, weight, and composite complexities following the EMD downselect to a single air vehicle/integration contractor and a single engine contractor. Impact of the FY94 rephase due to funding reductions, POM disconnects, FY95 congressional reduction (\$110M), and FY96 OSD reduction (\$200M). Adjustments also included for test refinements, program refinements, adjustments for current and prior inflation, current and prior year escalation changes, and Small Business Innovative Research (SBIR). Estimate refined based on development data not previously available.

Support: Change due to increased factor base.

Procurement

Economic: Revised economic escalation indices and economic adjustment for negative program change.

Quantity: Quantity variance resulting from decrease of 206 units.

Schedule: Schedule variance resulting from FY 93 funding shortfalls, quantity allocation, and recategorized to correct error in Dec 92 SAR. Slip of 1 year in production due to funding reductions.

Engineering: Addition of 1000 lb JDAM requirement.

Estimating: Program refinements.

Support: Variance associated with inclusion of Interim Contractor Support (ICS) and Common Support Equipment (CSE), a decrease of 206 units, and recategorized to correct error in Dec 92 SAR. Adjustments also include estimating factor adjustment in initial spares, and estimate refinements in both Peculiar Support Equipment (PSE), and other weapon systems cost.

MILCOM

Economic: Revised economic escalation indices, and adjustments for negative program change.

Engineering: Increase due to the addition of a level 4 data lab, and an additional environmental requirement.

Estimating: Variance based on revised depot requirements, and an estimate refinement. Revised estimating methodology from cost per wing to cost per squadron, revised beddown plan, cost realignment, and an adjustment for current & prior inflation.

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

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-324.8
Acceleration/Stretchout of annual procurement buy profile related to Impact of Congressional and OSD FY95/96 Budget Reductions (Schedule)	+861.3	+1096.5
Adjustment for Current and Prior Inflation. (Estimating)	+87.2	+102.0
Program estimate refinement (Estimating)	-62.6	-78.1
Transfer of 4 PFV articles from production to RDT&E. (Quantity)	+705.9	+882.6
RDT&E Subtotal	+1591.8	+1678.2
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-5481.9
Economic adjustment for negative program change. (Economic)	N/A	+123.7
Impacts of transferring 4 Preproduction Verification (PFV) articles from the Production appropriation to the RDT&E appropriation. (Quantity)	-190.0	-469.8
Net effect of transferring 4 Preproduction Verification (PFV) articles from the Production appropriation to the RDT&E appropriation. (Estimating)	-170.1	-114.1
Initial Spares reduction resulting from moving 4 PFVs (Support)	-37.2	-73.1
Net impact resulting from slipping Depot three years. (Support)	+572.9	+924.2
Net effect of transferring 4 PFV articles from the Production appropriation to the RDT&E appropriation. (Support)	-44.0	-31.4
Procurement Subtotal	+131.6	-5122.4
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-17.1

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

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.6
SAF MILCON reduction (Estimating)	-3.3	+0.6
Revised Depot Requirements (Estimating)	-0.2	+1.1
Revised Training Center Requirements (Estimating)	-4.2	-5.3
Revised Beddown Plan (Estimating)	+22.2	+36.3
MILCON Subtotal	+15.0	+16.2

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
152.95	-22.15	22.38	8.54	0.67	1.20	--	-5.01	5.63	158.58

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

a. (U) RDT&E --

(U) F-22 EMD (LASC):
 LOCKHEED MARTIN CORP, Marietta, GA
 F33657-91-C-0006, CPAF
 Award: August 2, 1991
 Definitised: August 2, 1991

Target	Initial Contract Price	
	Ceiling	Qty
\$9550.1	N/A	11

Current Contract Price		
Target	Ceiling	Qty
\$11452.4	N/A	9

Estimated Price At Completion	
Contractor	Program Manager
\$12317.4	\$13480.9

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-181.3	\$-86.0
Cumulative Variances To Date (12/31/95)	\$-24.2	\$-74.7
Net Change	\$157.1	\$11.3

Explanation of Change:

Explanation of Change:

The \$+157.1M Net Change cost variance through December 1995

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

represents a positive change since the June 1995 report due to rebaselining of the contract. The rebaselining efforts began in June 1995 and was completed in October 1995 with the last major supplier resetting the cumulative cost variances to zero. Note the cumulative cost variance does not include an unfavorable cost variance of \$181.2M which existed prior to the June 1995 cost growth baseline implementation. This note will appear in all future submissions of the Selected Acquisition Report to ensure its visibility is not lost.

The cumulative cost variance to date of \$-24.2M is largely driven by negative performance within airframe and utilities & subsystems. The airframe cost variance has increased as a result of late-to-need parts and schedule compression due to the machinist strike at Boeing. In addition, Block 2 loads impacts on Block 1 aircraft has contributed to the airframe cost increase. The utilities & subsystems cost variance is primarily attributed to subcontractor performance for the auxillary power system and the electrical power system.

The \$+11.3M Net Change schedule variance through December 1995 represents a positive change since the June 1995 report due to rebaselining of the contract. The rebaselining efforts began in June 1995 and were completed in October 1995 with the last major supplier resetting the cumulative schedule variances. Note the cumulative schedule variance does not include an unfavorable schedule variance of \$59.4M which existed prior to the June 1995 cost growth baseline implementation.

The cumulative schedule variance to date of \$-74.7M is largely driven by negative performance within airframe, avionics, and utilities & subsystems. The airframe schedule variance has increased as a result of schedule compression due to the machinist strike at Boeing and late-to-need parts. The avionics schedule variance is due to subcontractor performance for the communication, navigation, & identification system; the electronic warfare system, and controls & displays system. The utilities & subsystems schedule variance is primarily attributed to subcontractor performance for the auxillary power system and the environmental control system.

The decrease in Lockheed's Estimated Price At Completion is due to reducing the authorized unpriced work related to cost growth and rephasing the program. The decrease in the Program Manager's Estimated Price at Completion is primarily due to the rephase and cost growth proposal being less than originally estimated. The Program Manager's Estimate at Completion is based on the cumulative cost and schedule performance indices and adds target profit, known risk, planned changes, and maximum award fee possible.

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

The increase in the Current Contract Price since the June 1995 SAR reflects additional award fee earned during the period.

			Initial Contract Price	
(U) EMD ENGINE (P&W):			Target	Ceiling
PRATT&WHITNEY - GOVT, WEST PALM BEACH, FL				
F33657-91-C-0007, CPAF			\$1375.1	N/A
Award: August 2, 1991				
Definitized: August 2, 1991				
			Qty	
				33
Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1904.1	N/A	27	\$2098.9	\$2219.6
			Cost Variance	Schedule Variance
Previous Cumulative Variances			\$-36.8	\$-19.5
Cumulative Variances To Date (12/31/95)			\$-0.3	\$-21.0
Net Change			\$36.5	\$-1.5

Explanation of Change:

Through December 1995 the cumulative unfavorable cost variance was \$0.3M (0.0%). This is an improvement of \$36.5M from the June 1995 SAR. This improvement can be attributed to rebaselining of the contract that removed \$41.3 unfavorable cost variance. The current cumulative cost variance is related primarily to problems encountered in manufacturing the hollow fan blade and inlet cases.

Through December 1995 the cumulative unfavorable schedule variance was \$21.0M (1.7%). This variance represents a decline of \$1.5M from the June 1995 SAR. The rebaselining of the contract removed \$21.9M unfavorable schedule variance. The drivers of the current cumulative schedule variance are: fan and inlet case delivery problems; late verification testing in the controls and diagnostics systems; and late parts delivery for the nozzle.

The \$40.0M increase in the Contractor's Estimated Price At Completion reflects the cost of realigning the Pratt and Whitney contract to Lockheed-Martin's rephased airframe contract. The Program Manager's estimated price at completion is based on the cumulative cost and schedule performance indices and adds target profit, known risk, planned changes and maximum award fee possible.

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

a. (U) Program Status --

- (1) Percent Program Completed: 43.8% (14 yrs/32 yrs)
- (2) Percent Program Cost Appropriated: 20.0% (\$14029.2 / \$70093.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2014)	Total
RDT&E	11847.6	2164.9	2003.0	5189.2	21204.7
Procurement	-	-	-	48684.4	48684.4
MILCON	4.6	12.1	4.4	182.9	204.0
O&M	-	-	-	-	-
Total	11852.2	2177.0	2007.4	54056.5	70093.1

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

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

1983				24.8	20.0	20.0	20.0	4.9
1984				40.7	34.1	34.1	34.1	3.8
1985				104.8	90.8	90.8	90.8	3.4
1986				171.5	152.1	152.1	152.1	2.8
1987				320.6	297.2	297.2	297.2	2.7
1988				529.8	504.4	504.4	504.4	3.1

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1989				801.7	800.1	800.1	800.1	4.2
1990				1093.6	1124.2	1124.2	1124.2	4.0
1991				893.4	953.3	949.1	947.8	4.3
1992				1463.4	1606.8	1606.3	1606.1	2.8
1993				1715.9	1925.2	1924.3	1922.9	2.7
1994				1804.4	2058.8	2057.5	2051.7	2.0
1995				1961.0	2280.6	2273.9	2011.8	1.9
1996				1822.3	2164.9	1337.1	1.0	2.0
1997				1649.9	2003.0			2.2
1998				1783.0	2214.5			2.3
1999				1117.7	1418.3			2.2
2000				739.8	959.5			2.2
2001				435.8	577.4			2.2
2002				14.4	19.5			2.2
Subtot	4			18488.5	21204.7	13171.1	11564.2	

Years 1998-2001 do not reflect impacts resulting from FY95/FY96 funding reductions.

F-22, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3010 Aircraft Procurement, Air Force

1998				67.9	86.8			2.3
1999	4	10.7	446.7	830.3	1085.2			2.2
2000	12	81.8	1109.4	1501.2	2005.6			2.2
2001	24	85.1	1943.2	2392.4	3265.6			2.2
2002	36	40.8	2625.2	3274.2	4567.5			2.2
2003	48	20.4	3138.7	3701.8	5278.8			2.2
2004	48		2925.0	3451.1	5031.7			2.2
2005	48		2777.3	3351.8	4994.2			2.2
2006	48		2668.7	3272.9	4981.4			2.2
2007	48		2579.6	3182.3	4951.7			2.2
2008	48		2507.0	3071.0	4882.9			2.2
2009	48		2446.4	2835.5	4607.7			2.2
2010	26		1303.7	1507.8	2504.5			2.2
2011				139.1	236.1			2.2
2012				76.5	132.8			2.2
2013				31.5	55.9			2.2
2014				8.8	16.0			2.2
Subtot	438	236.8	26470.9	32696.1	48684.4			

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F-22, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated Ex-pended	

Appropriation: 3300 Military Construction, Air Force

1995				3.9	4.6		1.9
1996				10.0	12.1		2.0
1997				3.5	4.4		2.2
1998							2.3
1999				0.2	0.3		2.2
2000							2.2
2001							2.2
2002				6.4	8.9		2.2
2003				6.1	8.6		2.2
2004				16.2	23.5		2.2
2005				6.2	9.1		2.2
2006				19.7	29.7		2.2
2007				14.4	22.2		2.2
2008				12.5	19.7		2.2
2009				17.1	27.6		2.2
2010				5.0	8.3		2.2
2011				14.8	25.0		2.2
2012							2.2

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F-22, December 31, 1995

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

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 3300 Military Construction, Air Force (Cont'd)

Subtot				136.0	204.0			
Grand Total	442	238.8	26470.9	51320.6	70093.1	13171.1	11564.2	

Note: Obligated and expended amounts reflect program office records as of 29 February 1996.

The USAF FY97 Program Objective Memorandum (POM) essentially deleted FY99-01 MILCON funding. The program office has submitted a POM disconnect to HQ ACC to cover FY99-01 requirements.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate has been updated to reflect current program structure as of 31 December 1995.

The F-22 concept of operation is an 18 aircraft fighter squadron with a utilization rate of 332 flight hours per aircraft per year. The wartime scenario was used to estimate the manpower requirements.

The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-22 cost estimate was 442.

F-22, December 31, 1995

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

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F-22 Squadron	Avg Annual Cost Per F-15C Squadron
Unit Mission Personnel	14.6	23.1
Unit Level Consumption	18.1	12.9
Depot Maintenance	2.6	13.8
Sustaining Support	1.6	19.0
Installation Support Per	0.0	3.1
Indirect Support	6.1	7.7
Depot Support	0.0	2.1
Contractor Support	1.8	0.0
Acquisition and Training	0.0	8.2
Total	44.8	89.9

The F-15C is antecedent to the F-22; both are two engine air-to-air fighters with similar operational concepts. The F-15C concept of operation is a 24 aircraft fighter squadron with a utilization rate of 360 flight hours per year per aircraft. The wartime scenario was used to estimate the manpower requirements. The peacetime utilization rate for the weapon system was used to estimate the O&S cost. Training and combat coded squadrons were addressed as operationally the same for this O&S estimate. Total aircraft buy for the F-15C cost estimate was 648.

Both the F-22 and F-15C estimates were based on API 65-503 Cost and Planning Factors. There is no planned intermediate maintenance for the F-22 based on 2-Level maintenance concept. The variation in cost categories is representative of the Office of the Secretary of Defense Cost Analysis Improvement Group (OSD CAIG) dated May 92.

c. (U) Contractor Support Costs -- None.

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F-22, December 31, 1995

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

There is no current O&S requirement for the F-22 program.

*** UNCLASSIFIED ***

AF-20 TITAN IV

SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 823)
PROGRAM: Titan IV

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Titan IV, Expendable Launch Vehicle (ELV)

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

Space and Missile Systems Center/CL Col Tommy L. Brasie
160 Skynet Street Assigned: July 17, 1995
Suite 1215 AV 833-3915 COMM (310)363-3915
Los Angeles AFB, CA 90245-4659

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0304111F (Shared) Project 299998, 346503, 6569AJ
PE 0305119F (Shared) Project 66624A
PE 0305144F, 0305171F (Shared)

PROCUREMENT:

APPN 3020 ICN MSBSTR (Air Force) (Shared) Project 23BSTR
APPN 3020 ICN MSO299 (Air Force)
APPN 3080 ICN 834600 (Air Force)

MILCON:

PE 0305119F

5. Related Programs:

Defense Support Program (DSP); Military Satellite Communication System (MILSATCOM); Space Shuttle Operations-Inertial Upper Stage (IUS); Classified Payloads

SAF/PAS

96-260 - T

CLEARED

FOR OPEN PUBLICATION

SECURITY REVIEW (CLASSIFIED)
DEPARTMENT OF DEFENSE

Titan IV, December 31, 1995

6. Mission and Description:

The Titan IV is a heavy lift rocket booster that will assure continued access to space for the nation's highest priority space systems. The Titan IV program will not replace any defense programs. The Titan IV system evolved from the basic family of Titan systems, namely the Titan III and 34D, which have contributed to national space objectives for more than 25 years. The Titan IVA vehicle configuration consists of a two stage liquid propellant core with a pair of large, attached solid rocket motors (SRM) which provide the initial boost stage after liftoff. The new Titan IVB vehicle configuration with solid rocket motor upgrade (SRMU) and new avionics will provide increased reliability, producibility, and performance. The two upper stages baselined for use on the Titan IV are the Inertial Upper Stage (IUS) and the Titan/Centaur. When configured with the Centaur and SRMU, Titan IV is capable of placing an 11,500-pound payload into Geosynchronous Earth Orbit (GEO). When configured with No Upper Stage (NUS) and SRMU, Titan IV can place a 47,000-pound payload into a 100-nmi circular, polar orbit. The Titan IV was designated a Defense Acquisition Board (DAB) program in July 1991.

7. Program Highlights:

a. Significant Historical Developments --

Development of the Titan IV was in direct response to a National Security Decision Directive. The initial contract for 10 Titan IVs with Centaur upper stages was awarded in February 1985. As a result of the January 1986 Space Shuttle accident, the Department of Defense (DoD) began a recovery plan which included the acquisition of 13 additional Titan IVs. The resulting 23-vehicle program, placed on contract in December 1987, was structured to account for the impacts of the April 1986 Titan 34D accident and the June 1986 National Aeronautics and Space Administration (NASA)/Centaur cancellation. The DoD later embarked on an increased capacity plan which included an additional launch pad at Cape Canaveral Air Station (CCAS), 18 additional Titan IV boosters, and associated facility enhancements. The current 41-vehicle program was definitized in December 1989. The Titan IV was designated a Defense Acquisition Board (DAB) program in July 1991. In September 1991, Production Slowdown I (PS I) reduced production from 10 to 5.5 vehicles per year to match reduced launch rate requirements; there were further reductions to 3 vehicles per year in June 1993 with Production Slowdown II (PS II) and 2 vehicles per year in January 1994 with the production "bridge." The Unified Payload Integration (UPI) contract was awarded in July 1992 to provide payload integration capability through FY97. The first Titan IV was successfully launched in June 1989 from CCAS. In April 1991, an explosion occurred during the static firing test of the SRMU Preliminary Qualification Motor No. 1 (PQM-1) causing significant damage to the test facility. SRMU casting began in November 1993 after all further tests were successful. A Titan IV vehicle launched

Titan IV, December 31, 1995

7a. Program Highlights (Cont'd):

from Vandenberg Air Force Base (VAFB) on 2 Aug 1993 experienced a failure caused by a burn through on one of the SRMs. The program successfully recovered with the launch of Titan IV-10/Military Strategic and Tactical Relay (Milstar) payload in February 1994, the first Titan IV/Centaur launch from Launch Complex-40 (LC-40) at CCAS. The first SRMU segment was delivered to VAFB on 14 Feb 94.

b. Significant Developments Since Last Report --

Four successful Titan IV launches occurred since last report including Milstar II and three classified payloads. The development of the Titan Master Contract Plan continues in order to break out Titan contracts into six separate contracts to better manage the program. The Acquisition Strategy Panel approved the System Program Office (SPO) plan in Mar 95. In Jul 95 a Stage II engine nozzle failed during a verification test which was necessitated by a vendor change. Recovery efforts are ongoing with no launch schedule impacts expected. The Titan IVB System Critical Design Review was successfully completed on 19 Oct 1995. Titan IVB Initial Operational Capability (IOC) is scheduled for Sep 1996. The Titan Single Acquisition Management Plan, which included an update to the Acquisition program Baseline (APB) to reflect a reduction in quantities from 65 to 47 vehicles, was approved by SAF/AQ on 22 Dec 95 and is awaiting OSD approval. The new production and launch operations follow-on contracts supporting the 41 vehicle program are expected to be awarded in Apr 96. The follow-on buy for up to five additional vehicles is expected to be awarded in Nov 96.

The Titan IV system will satisfy mission requirements.

c. Changes Since As Of Date --

The first Titan IVB core vehicle (Titan IVB-24) was shipped to CCAS on 23 Jan 1996. SAF/AQ approved business clearance on the Launch Operations and Production follow-on contracts (-0012 and -0001) on 8 Mar 96. The Titan IV program was reduced from 47 to 46 vehicles based on Program Budget Decision (PBD) 604 to select the DSP 23 mission as the low risk payload flight for the Evolved Expendable Launch Vehicle (EELV) program in FY 03. Titan IV reductions to the FY 97 President's Budget in conjunction with an Air Force Space Command (AFSPC) operational effectiveness assessment have led to direction to delete the Centaur Processing Facility (CPF) capability and associated CPF IOC milestones from the Titan IV Acquisition Program Baseline (APB).

8. Threshold Breaches:

There are no breaches to the approved Defense Acquisition Executive (DAE) Acquisition Program Baseline (APB) dated 26 May 94, and no Nunn-McCurdy Unit Cost Breaches.

Titan IV, December 31, 1995

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Initial Contract Award	FEB 85	FEB 85	FEB 85
Production Start	OCT 85	N/A	OCT 85
System Preliminary Design Review	APR 86	N/A	APR 86
Critical Design Review	NOV 86	NOV 86	OCT 86
Addition of 13 Vehicles	N/A	DEC 87	DEC 87
First Core Delivery to CCAFS	N/A	JAN 88	JAN 88
First Delivery to CCAFS	FEB 88	N/A	APR 88
Initial Launch Capability (ILC)			
Titan IV/IUS	OCT 88	FEB 89	FEB 89
Titan IV/NUS (WTR)	N/A	OCT 90	OCT 90
Titan IV/Centaur	N/A	MAY 93	SEP 93
SLC-40	N/A	SEP 92	FEB 93
Centaur Structural Test	N/A	JUL 89	APR 91
SRMU Static Firing (PQM-1)	N/A	JUN 92	JUN 92
SRMU ILC	N/A	JUL 96	JUL 96
Centaur Processing Facility IOC	N/A	JAN 97	JAN 97

Note: Space Launch Complex-40 (SLC-40) is referred to as LC-40 throughout this document.

b. Previous Change Explanations --

Due to favorable progress driven by the Preliminary Design Review, the Systems Critical Design Review (CDR) was held one month ahead of schedule.

Progress made by the core contractor allowed delivery of the first core to CCAS ahead of schedule. However, delays in deliveries of the payload fairing and solid rocket motors caused a delay in delivery of the final vehicle components from February to April 1988. The delay in the Titan IV/NUS Western Test Range (WTR) ILC at VAFB to December 1990 was caused by the requirement for additional electrical modifications to the Mobile Service Tower (MST) and the need to complete ground systems tests. The Titan IV/NUS WTR ILC was subsequently achieved two months early in October 1990.

The initial Centaur ILC structural test (July 1989) was completed in November 1989. Additional Centaur tests were completed in April 1991.

The delayed launch of the first Titan IV caused a slip in the TIV/Centaur ILC due to derived scheduling conflicts. A further slip occurred from August 1991 to November 1991 due to a launch delay of Titan IV-6. The delay impacted facility modifications necessary for Centaur. An additional slip from August 1991 to November 1991 due to Centaur separation ring redesign and test in preparation for the ILC and a May 1991 Atlas Centaur flight failure (AC-70). A further slip

Titan IV, December 31, 1995

9b. Schedule (Cont'd):

from November 1991 to February 1992 resulted from additional inspections for contaminations resulting from the Commercial Atlas/Centaur (AC-70) failure investigation. The next slip from February 1992 to December 1992 was due to an acceptance test failure of the Digital Computer Unit. The next slip from December 1992 to June 1993 was due to assessment of the August 1992 AC-71 failure and user direction. Titan IV/Centaur ILC was successfully achieved during September 1993 which was a slip from February 1993 due to implementation of AC-71 failure fixes.

The requirement for a second VAFB launch pad (SLC-7) was deleted. Previous LC-40 ILC of fourth quarter FY 92 was further refined to reflect a July 1992 ILC. LC-40 ILC was successfully achieved on 28 February 1993.

A crane accident in September 1990 at Edwards AFB damaged the test stand, delaying the PQM-1 test until April 1991, and the SRMU ILC until May 1992. The SRMU static firing (PQM-1') slipped from February 1991 to April 1992 because of the SRMU PQM-1 test explosion occurring on 1 April 1991. The PQM-1 test failure also delayed the SRMU ILC from May 1992 to August 1993. The SRMU static firing (PQM-1') slipped from April 1992 to May 1992 due to production schedule delays for the test "aft skirt" which is the attachment between the SRMU and the test stand. The SRMU static firing (PQM-1') further slipped from May to June 1992 due to weather conditions (i.e. winds) at the test site. PQM-1' was successfully tested on 12 June 1992. The SRMU ILC was delayed from August 1993 to July 1994 due to further delays in the qualification test program. Delays in the development of the Flight Termination System (FTS) further delayed SRMU ILC from July 1994 to July 1996.

IOC of the Centaur Processing Facility was delayed from September 1995 to January 1997 due to FY 94 budget cuts and delays in awarding the military construction contract.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY87 President's Budget, February 1986.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

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10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
System Reliability (%)	98	98	/ 96	93	96	(Ch-1)
Payload to Geosynchronous Orbit (k-lbs) (Titan IV/Centaur)						
SRM	10.0	10.0	/ 10.0	10.0	10.0	
SRMU	N/A	11.5	/ 11.5	11.5	11.5	
Payload to Transfer Orbit (k-lbs)						
SRM	N/A	38.8	/ 38.8	39.3	39.3	
SRMU	N/A	47.0	/ 47.0	47.0	47.0	
Payload to Low Earth Polar Orbit (k-lbs) (Titan IV/NUS)						
SRM	N/A	31.1	/ 31.1	31.4	31.4	
SRMU	N/A	38.8	/ 38.8	38.8	38.8	

Note: Although the Centaur structural limit for certain payloads to Geosynchronous orbit is 11.5 K-lbs, specific Titan IV Centaur/SRMU missions do exceed this capability. Therefore, no current direction or funding is required to modify the Centaur for increased capability. Demonstrated performance is based on test and analysis data for yet-to-be launched vehicle configurations (SRMU).

b. Previous Change Explanations --

Performance Objectives/Thresholds for payload to low earth polar orbit (Titan IV/NUS) were updated in the 9 June 1993 APB revision to reflect requirements in the 2 April 1991 System Operational Requirements Document (SORD).

Demonstrated performance for Titan IV System Reliability was increased from 88% to 91% due to two successful launches.

The demonstrated performance for Payload to Geosynchronous Orbit (Titan IV/Centaur) was reduced from 10.2 to 9.8 k-lbs. due to the results of recent Centaur engine testing. The resulting current estimate was also reduced from 10.2 to 10.0 k-lbs. due to the results of recent Centaur engine testing.

The 09 June 1993 APB added the Payload to Transfer Orbit section and deleted the previous section on Payload to Geosynchronous Orbit (Titan IV/IUS) SRM.

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10c. Performance Characteristics (Cont'd):

c. Current Change Explanations --

(Ch-1) Due to four successful launches during the period, Titan IV demonstrated performance for system reliability has been increased from 91% to 93%.

d. References --

Development Estimate:
FY87 President's Budget, February 1986.

Approved Program:
DAE Approved Acquisition Program Baseline dated May 26, 1994.

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

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. Cost --			
Development (RDT&E)	579.7	3194.0	2679.6
Procurement	1570.8	19868.4	14081.6
Flyaway	(1106.6)		(11481.1)
Other Wpn Sys	(464.2)		(2600.5)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	105.3	95.2
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 85 Base-Year \$	2150.5	23167.7	16856.4
Escalation	378.7	14545.4	6705.8
Development (RDT&E)	(61.4)	(1252.3)	(719.3)
Procurement	(317.3)	(13267.4)	(5957.8)
Construction (MILCON)	(0.0)	(25.7)	(28.7)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2529.2	37713.1	23562.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10</u>	<u>65</u>	<u>46</u>
Total	10	65	46

Note: All end items are considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None

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

d. Nuclear Costs -- None

e. References --

Development Estimate:

FY87 President's Budget, February 1986.

Approved Program:

DAE Approved Acquisition Program Baseline dated May 26, 1994.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (MAY 94 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY85\$)	16856.4	23167.7	
(2) Quantity	46	65	
(3) Unit Cost	366.44	356.43	2.81
b. Procurement			
(1) Cost (BY85\$)	14081.6	19868.4	
(2) Quantity	46	65	
(3) Unit Cost	306.12	305.67	0.15

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	641.1	1888.1	0.0	2529.2
Previous Changes:				
Economic	-9.9	+25.1	+7.4	+22.6
Quantity	-	+4379.4	-	+4379.4
Schedule	+795.1	+4478.5	+5.0	+5278.6
Engineering	+1067.9	-3607.8	-	-2539.9
Estimating	+862.9	+11099.5	+110.4	+12072.8
Other	-	-	-	-
Support	+142.9	+3184.3	-	+3327.2
Subtotal	+2858.9	+19559.0	+122.8	+22540.7
Current Changes:				
Economic	-61.3	-1038.7	-0.4	-1100.4
Quantity	-12.8	-168.0	-	-180.8
Schedule	-	-	-	-
Engineering	32.7	-22.8	-	+9.9
Estimating	2.3	246.1	1.5	+249.9
Other	-	-	-	-
Support	-62.0	-424.3	-	-486.3
Subtotal	-101.1	-1407.7	+1.1	-1507.7
Total Changes	+2757.8	+18151.3	+123.9	+21033.0
Current Estimate	3398.9	20039.4	123.9	23562.2

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1985 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	579.7	1570.8	0.0	2150.5
Previous Changes:				
Quantity	-	+4178.7	-	+4178.7
Schedule	+377.7	+1553.1	-	+1930.8
Engineering	+774.4	-2234.8	-	-1460.4
Estimating	+709.2	+6861.5	+94.1	+7664.8
Other	-	-	-	-
Support	+265.4	+2365.0	-	+2630.4
Subtotal	+2126.7	+12723.5	+94.1	+14944.3
Current Changes:				
Quantity	-8.4	-109.1	-	-117.5
Schedule	-	-	-	-
Engineering	17.2	-53.8	-	-36.6
Estimating	1.7	178.9	1.1	+181.7
Other	-	-	-	-
Support	-37.3	-228.7	-	-266.0
Subtotal	-26.8	-212.7	+1.1	-238.4
Total Changes	+2099.9	+12510.8	+95.2	+14705.9
Current Estimate	2679.6	14081.6	95.2	16856.4

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: Impact on integration costs due to program stretch-out from FY00 to FY05. Extended the program's procurement, delivery, and launch schedules from FY05 to FY14.

Engineering: Design effort for satellite dual compatibility; continued effort for a second west coast Titan IV launch pad development at VAFB, CA; SRMU development FY94-95; Preplanned Product Improvements (P3I) and range safety design modifications. Revised Flight Termination System block upgrade beginning on vehicle #24 and

Titan IV, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

lightning mitigation towers for LC-41. Range safety regulations required additional vehicle modifications. Program extension due to changes in user requirements through FY14 required upgrades and modernization of vehicle hardware. New requirement to requalify SRMU and decrease in number of vehicles from 65 to 47, increased hardware development costs. Elimination of upgrades reduced Continuous Product/Process Improvement (CPPI) costs.

Estimating: Recurring/nonrecurring payload integration revised estimates; Transfer to procurement of funds for previously designated shuttle missions; Transfer of outyear funds from procurement; Gramm/Rudman/Hollings reductions; Adjustment for outyear escalation; Lower Centaur unit price as a result of negotiations; Funding for Centaur development and projected contractor overrun, additional Federally Funded Research & Development Corporation (FFRDC) support for increased program scope, facility design support for the Solid Motor Assembly and Readiness Facility (SMARF) and Centaur Processing Facility (CPF); Payload integration increased program scope for FY96-97; Single Best Estimate (SBE) update for SRMU development amortization; reduced outyear mission model; addition of M Account funds to offset prior year overrun; deletion of SLC-6 development; negotiated cost adjustment for LC-40 and CPF; hardware storage, SRMU costs, and revised Payload Integration estimate due to program stretch-out. Future vehicle buy reconfiguration caused a reduction in launch vehicle, Aerospace Ground Equipment (Age), and integration costs. Age/Facility maintenance revised estimate. Payload integration and range safety compliance revised estimates. Adjustment for current and prior year Escalation.

Support: Additional support equipment for accelerated activation at the CCAS, FL, launch site; Facility design for the new Centaur Processing Facility and upgrades to the SRM testing facility at CCAS, FL; Second west coast launch pad modification to change from shuttle to Titan IV capability at VAFB, CA. Partial funding for LC-40 facility upgrade to protect Mars Observer mission schedule. SRMU Amortization, Working Capital Adjustment and Claims. New federal regulations requiring

Titan IV, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

development of hazardous waste management and pollution prevention programs. Current environmental law compliance revised estimate. Decrease in number of vehicles from 65 to 47 and program shortening from 2014 to 2011 reduced contractor engineering and management costs. Shortening of program also reduced program office support and engineering change costs.

Procurement

- Economic:** Revised economic escalation indices.
- Quantity:** Additional hardware costs (from 10 to 75 vehicles); Reduced vehicle quantity (from 75 to 65). Reduced vehicle quantity (from 65 to 47) reduced hardware and non Air Force Unified Payload Integration costs.
- Schedule:** Change due to rephasing of production build schedule; Accelerated buy of original 23 vehicles; Adjustments to vehicle launch requirements to comply with Oct 91 Space Launch Advisory Group (SLAG); Impact due to production slow down schedule. Delay in mission requirements deferred booster hardware procurement for vehicles 42 through 65 (42+) by at least one year. Procurement, delivery, and launch schedule extension resulted in continuation of sustaining engineering and launch services contract through FY14. Reduced launch capability and the shortening of the program from 2014 to 2011, reduced launch services costs.
- Engineering:** Additional hardware to accommodate satellite dual compatibility and mission requirements precluded Centaur upper stages; Initial hardware for an upgraded SRM; Mission requirements preclude the need to procure Centaur upper stages for eleven Titan IVs; Tooling to support an increased production rate at contractor's facility. Program stretch-out through FY14 required upgrade and modernization of vehicle hardware. Range safety regulations modifications required additional vehicle modifications. Decrease in the number of vehicles from 65 to 47 and shortening of the program from 2014 to 2011 reduced the cost of incentives and engineering changes. Elimination of upgrades reduced CPPI costs.
- Estimating:** Recategorization of Flyaway/Support cost reported in December 1985 SAR, Transfer from RDT&E of funds for previously designated shuttle missions;

Titan IV, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Transfer of outyear funds to RDT&E; Centaur procurement due to STS/Centaur cancellation; Deletion of classified user operation and maintenance funds; Gramm/Rudman/Hollings reductions; Funding reductions due to budget cycle reviews; Unit price benefits of increased quantity buy; Adjustment for current and prior year escalation changes; Realignment to support programmatic changes; Increased government involvement in plant inspections; Additional tooling to support higher productivity capacity; Additional FFRDC engineering support as a result of increased program scope; Procurement of an additional payload fairing to support satellite integration on Titan IV; Contractor launch incentives required for additional vehicles; Propellant requirements for additional vehicles; Payload integration of additional missions; negotiation of the follow-on buy; Vehicle configuration changes; Revised contractor incentive plan; Multiyear rephase funding adjustment; Incremental funding adjustment; Communication equipment for second west coast pad at VAFB, CA; Addition of M Account funds for prior year overrun; Correction to Dec 90 SAR entry; Recategorization of Jun 91 SAR cost change from estimating to support; Cost impact of stretched program on incentives, propellants, manifest planning, integration and production cost. Additional storage supported reduction of launch requirements. Production rate slowdown from 5.5 to 3 vehicles per year resulted in increased cost for vehicles 42 through 65. Increase of stockfund prices for flight propellants. Added program improvements, CPPI and Industrial Modernization. Changes in future requirements for Centaur upper stages and launch vehicles resulted in revised hardware estimate. Shift of the 42+ Follow-on buy from FY 95 to FY97 resulted in increase in hardware and systems engineering costs. Revised estimate for facilities and ground equipment. Changes in future buy plans caused an increase in non-Air Force payload integration costs. Revised estimate included allowance for settlement of prior and out year contractor claims. Defense cutbacks caused changes to contractor business base, resulted in projected increased overhead rates. Delayed procurement and launch schedule resulted in revised engineering

Titan IV, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

change estimate. Revised estimate to maintain AGE and facilities through program life, to complete Range Safety improvements, and to settle prior and out year contractor claims.

Support: Accelerated support equipment procurement at CCAS, FL and recategorization of Flyaway/Support costs reported in December 1985 SAR; Initial AGE and communication equipment requirements supported launch requirements at CCAS, FL and VAFB, CA; AGE for second west coast launch pad at VAFB, CA; AGE requirements at CCAS, FL supported increased program scope and duration (includes new SMARF); Deletion of SLC-6 AGE and communication equipment; Transfer of launch processing costs from O&M to Procurement; Recategorization of Jun 91 SAR cost change from estimating to support; Correction to Dec 90 SAR entry; Updated estimate to reflect four additional years of launch operations and impacts to other support requirements; Additional technical support for SRMU production; Adjustment for current and prior year escalation offset. Revised estimate for launch operations, storage and sustaining engineering due to program stretchout. Disposition of Government-owned, contractor operated facilities. New federal regulations required the development of hazardous waste programs. Delays in launch schedule required additional vehicle storage. Program stretch-out required continued program office technical and management support. Program shortening and quantity reduction reduced contractor management and engineering cost. Reduced manpower requirements and shortening of program lowered cost of program office technical support. Quantity reduction reduced storage costs. Environmental law compliance revised estimate.

MILCON

Economic: Revised economic inflation indices.
Schedule: Change due to rephasing of build schedule.
Estimating: Adjustment for current and prior year escalation offset; Realignment of the second Titan IV launch pad costs into outyears; Funds added/realigned for SMARF and the CPF at CCAS, FL; Refined costs for CPF based on contractor proposal; Reduction in SLC-6 facility costs related to deletion of AGE and communication equipment requirements; Reduction in SMARF funding due to contract underrun. Revised estimate to complete construction of Solid Motor

Titan IV, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Assembly Building (SMAB) at CCAS.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised economic escalation indices. (Economic)	N/A	-61.3
Reduction in the number of vehicles from 47 to 46 reduces payload integration costs. (Quantity)	-8.4	-12.8
Requalification of follow-on buy hardware increases the non-recurring hardware costs. (Engineering)	+65.7	+95.0
New requirement for a program studies contract through FY03 increases the cost of system engineering and project management. (Engineering)	+94.4	+143.6
Elimination of the Centaur Processing Facility and other facilities requirements decreases the cost of facilities and aerospace ground equipment. (Engineering)	-35.6	-51.0
Elimination of upgrades reduces the cost of product improvements and range safety modifications. (Engineering)	-107.3	-154.9
Revised estimate to comply with current and future environmental laws and regulations. (Support)	-18.6	-32.1
Revised manpower requirements through the end of the program lowers the cost of program office support. (Support)	-18.7	-29.9
Adjustment for current and prior year escalation. (Estimating)	+1.7	+2.3
RDT&E Subtotal	<u>-26.8</u>	<u>-101.1</u>
(2) <u>Procurement</u>		
Revised economic escalation indices. (Economic)	N/A	-1038.7
Elimination of one follow-on vehicle results in reduction in total vehicles from 47 to 46 and reduced hardware costs. (Quantity)	-109.1	-168.0

Titan IV, December 31, 1995

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Addition of two SRMUs to the follow-on buy, combined with a reduced estimate of current contract hardware costs, results in a net increase of hardware costs. (Engineering)	+3.6	+51.6
Elimination of the requirement to replace a government owned company operated facility (GOCO), combined with update facility and ground equipment estimates reduces facility costs. (Engineering)	-21.3	-17.4
Elimination of upgrades reduces the cost of product improvements and range safety modifications. (Engineering)	-36.1	-57.0
Revised estimate for non Air Force payload integration results in lower integration costs. (Estimating)	-2.7	-10.4
Elimination of launch services requirements at CCAS from FY06-FY11, combined with an increased estimate of follow-on launch services costs results in decreased launch operations costs. (Estimating)	+0.1	-36.6
Revised estimate to close out existing and future Titan contracts. (Estimating)	+133.1	+226.6
Reduced manpower requirements lowers the cost of program office technical support. (Support)	-131.0	-245.2
An updated launch manifest, and the reduction in vehicles from 47 to 46, reduces the costs of vehicle storage. (Support)	-16.0	-38.8
Revised estimate to comply with current and future environmental laws and regulations. (Support)	-81.7	-140.3
Adjustment for current and prior year escalation. (Estimating)	+48.4	+66.5
 Procurement Subtotal	 <u>-212.7</u>	 <u>-1407.7</u>
 (3) <u>MILCON</u> Revised economic escalation indices. (Economic)	 N/A	 -0.4

Titan IV, December 31, 1995

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to complete construction of the Solid Motor Assembly Building (SMAB) at CCAS. (Estimating)	+0.8	+1.1
Adjustment for current and prior year escalation. (Estimating)	+0.3	+0.4
MILCON Subtotal	<u>+1.1</u>	<u>+1.1</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
252.9	-23.4	-106.7	114.8	-55.0	267.9	--	61.8	259.4	512.2

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

TITAN IV:
 LOCKHEED MARTIN, DENVER, CO
 F40701-85-C-0019, FPIF
 Award: February 28, 1985
 Definitized: March 1, 1985

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$2095.8	\$2287.8	10

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$11681.2	\$12636.8	41	\$12466.1	\$12536.6

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-518.1	\$-157.4
Cumulative Variances To Date (12/31/95)	<u>\$-453.7</u>	<u>\$-113.0</u>
Net Change	\$64.4	\$44.4

Explanation of Change:

Explanation of current changes: Change from Dec 94 SAR in target price from \$11,568.8M to \$11,681.2M was due to various contract modifications. Examples of the largest contract modifications are: Non UPI Support Task Orders, Inertial Guidance Unit replacement, Phase II CCAS Launch Restoration, and Pyotechine Shock Values.

Titan IV, December 31, 1995

15. Contract Information (Cont'd):

The decrease in cost variance to date (\$64.4M) is due to: (1) Synergy savings associated with the General Dynamics Acquisition; (2) Continued good performance at McDonnell Douglas; (3) Continued good performance at CCAS and VAFB launch sites; (4) Better performance in systems engineering. The schedule variance increase \$44.4M is primarily attributed to: the Centaur schedule variance \$44.7M was eliminated to reflect the Production Slowdown II (PSII) contractual modification. The program was rebaselined setting cumulative BCWS equal to cumulative BCWP as of Jan 1995.

Note: Contract F04071-85-C-0019 is categorized as FPIF/CPFF/CPAF/AF/CS/CR/MSI/FFP and includes RDT&E, Procurement, and O&M.

b. Procurement --			Initial Contract Price		
<u>UNIFIED PAYLOAD INT(UPI):</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
LOCKHEED MARTIN, DENVER, CO			\$673.5	N/A	0
F04701-92-C-0028, CPAF					
Award: June 30, 1992					
Definitized: June 30, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$676.3	N/A	0	\$676.3	\$676.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$18.3	\$-4.6	
Cumulative Variances To Date (12/31/95)			<u>\$31.0</u>	<u>\$-7.3</u>	
Net Change			\$12.7	\$-2.7	

Explanation of Change:

Explanation of change in target price (from \$675.5 to \$676.3M): Changes in both price and cost will occur throughout the duration of this contract. The contract is modified periodically, to support specific missions.

The \$12.7M change in cost variance on the -0028 underrun is due partly to work which was planned Level Of Effort (LOE), that is now planned discretely and partly to deferral of work relative to current mission requirements. The unfavorable schedule variance change (\$-2.7M) is due to rebaselining to realistic mission manifests. None of these variances are expected to adversely impact the cost at completion of this contract.

Titan IV, December 31, 1995

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 44.4% (12 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 56.9% (\$13406.1 / \$23562.2)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2011)	<u>Total</u>
RDT&E	2517.2	119.7	102.9	659.1	3398.9
Procurement	9815.3	830.0	972.6	8421.5	20039.4
MILCON	123.9	-	-	-	123.9
O&M	-	-	-	-	-
Total	12456.4	949.7	1075.5	9080.6	23562.2

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1985				32.9	33.6	33.6	33.6	3.4
1986				247.3	258.4	258.4	258.4	2.8
1987				160.9	175.7	175.7	175.7	2.7
1988				317.8	356.3	356.3	356.3	2.9
1989				340.3	400.2	400.2	400.2	4.2
1990				287.9	348.9	348.9	344.5	4.0

Titan IV, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AP (Cont'd)

1991				139.5	175.3	175.3	172.4	4.3
1992				169.9	219.9	219.9	215.5	2.8
1993				112.3	148.5	148.5	125.9	2.7
1994				193.2	259.6	259.6	128.4	2.0
1995				102.7	140.8	130.1	59.9	1.9
1996				85.5	119.7	30.8	0.2	2.0
1997				71.9	102.9			2.2
1998				120.8	176.8			2.3
1999				61.4	89.9			2.2
2000				35.3	53.9			2.2
2001				32.4	50.6			2.2
2002				42.0	67.1			2.2
2003				33.0	53.9			2.2
2004				11.5	19.1			2.2
2005				11.4	19.4			2.2
2006				11.4	19.8			2.2
2007				11.5	20.5			2.2
2008				11.7	21.3			2.2

Titan IV, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2009				11.6	21.6			2.2
2010				11.7	22.2			2.2
2011				11.8	23.0			2.2
Subtot				2679.6	3398.9	2537.3	2271.0	

Appropriation: 3020 Missile Procurement, Air Force

1985		42.7	69.7	112.4	118.5	118.5	118.5	3.4
1986		36.9	385.4	471.2	519.7	519.7	519.7	2.8
1987	2	90.5	592.3	766.8	881.8	881.8	881.8	2.7
1988	6	193.0	646.7	941.4	1122.1	1122.1	1122.1	2.9
1989	5	215.4	502.8	870.4	1083.7	1083.7	1080.1	4.2
1990	5	166.9	555.7	868.4	1101.1	1101.1	1080.7	4.0
1991	5	230.4	320.0	696.3	908.7	908.7	898.7	4.3
1992	6	296.9	232.0	719.7	951.4	951.4	927.4	2.8
1993	6	421.0	227.5	791.8	1068.1	1068.1	999.1	2.7
1994	4	239.3	501.3	878.9	1211.1	1172.8	954.8	2.0
1995	2	178.7	233.2	549.8	767.0	732.6	251.7	1.9
1996		127.6	316.5	582.0	830.0	143.4		2.0

Titan IV, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY85 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex- pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

1997		123.6	402.4	667.5	972.6			2.2
1998	2	84.3	436.8	659.7	982.9			2.3
1999	2	81.4	436.8	635.5	967.8			2.2
2000	1	66.9	416.4	582.9	907.0			2.2
2001		79.2	392.7	568.3	903.6			2.2
2002		57.4	335.7	475.1	772.1			2.2
2003		79.3	270.6	412.1	684.5			2.2
2004		163.6	206.0	434.5	737.8			2.2
2005		38.2	157.5	251.1	435.6			2.2
2006		37.6	91.5	181.0	320.9			2.2
2007		37.0	93.2	182.2	330.2			2.2
2008		30.5	96.7	181.9	336.8			2.2
2009		27.0	96.7	174.5	330.3			2.2
2010		29.3	98.6	179.0	346.1			2.2
2011		29.1	100.6	185.1	365.9			2.2
Subtot	46	3203.7	8215.3	14019.5	19957.3	9803.9	8834.6	

All User funded Titan IV vehicles, and all funding related to Air Force vehicles after December 1992, are incrementally funded. Therefore recurring Flyaway dollars do not correspond logically to

Titan IV, December 31, 1995

16c. Program Funding Summary (Cont'd):

procurement quantities in FY 85, 86, 96, and 97. From 2001 to 2011, there are no production quantities, but there are recurring costs which are associated with launch operations annual costs at Cape Canaveral and Vandenberg APB. These annual costs are contracted as a launch capability but are not tied to specific hardware units.

Appropriation: 3080 Other Procurement, Air Force

1992		62.1		62.1	82.1	82.1	81.0	2.8
Subtot		62.1		62.1	82.1	82.1	81.0	

Appropriation: 3300 Military Construction, Air Force

1990				44.1	55.8	55.8	43.9	4.0
1991				7.7	10.0	10.0	10.0	4.3
1992				18.2	24.0	24.0	16.3	2.8
1993				25.2	34.1	30.4		2.7
Subtot				95.2	123.9	120.2	70.2	
Grand Total	46	3265.8	8215.3	16856.4	23562.2	12543.5	11256.8	

Expenditures and Obligations reflect program office records as of January 31, 1996.

17. Production Rate Data:

a. Deliveries to Date --

		<u>Plan/Actual</u>
RDT&E		0/0
Procurement		33/33

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

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18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

The costs for launch processing are based on actual contract values for the current Titan IV program and were transferred from operation and support costs to procurement costs in conjunction with the FY92/93 President's Budget. Thus, these costs are not included below. Range costs continue to be carried as operation and support costs. Range costs are based on current and historical data from the Titan IV and Titan 34D program. The updated Titan IV Program Office Estimate (POE) annual O&S costs were estimated to be \$71.8M in base year dollars. With a reasonable rate of four launches per year the average annual cost in base year dollars is \$18.0M. The Titan 34D data is historical data from old SARs.

b. Costs -- (FY 1985 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Titan IV Launch	Avg Annual Cost Per Titan 34D Launch
Range Support	18.0	7.5
Total	18.0	7.5

Note: All costs described in Section 18.b are "average cost per launch" and not "average annual"

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A) 823)
PROGRAM: Joint STARS

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Joint STARS

2. (U) DoD Component: USAF

Joint Participants:
US Army

3. (U) Responsible Office and Telephone Number:
Joint STARS Program Office Col Robert W. Chedister
Electronic Systems Center Assigned: August 30, 1994
175 Vandenberg Drive AV 478-5725 COMM (617)377-5725
Hanscom AFB, MA 01731-2138

4. (U) Program Elements/Procurement Line Items:

RDFAE:
PE 0603770F
PE 0604270F Project 3894 (Shared)
PE 0604616F, 0604770D, 0604770F, 1001018F

96-C-0333

SAF/PAS

06-245 -

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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Joint STARS, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 3010 ICN 27581F (Air Force)

MILCON:

PE 0604770F

5. (U) Related Programs:

Global Positioning System (GPS), Joint Tactical Information Distribution System (JTIDS), Single Channel Ground Air Radio System (SINCGARS), Inertial Navigation Unit (INU), E-8 (formally C-18), HAVE QUICK, E-6, HAVE SYNC, Joint STARS Ground Station Module (GSM).

6. (U) Mission and Description:

The Joint Surveillance Target Attack Radar System (Joint STARS) is a Joint Army and Air Force Program, with the Air Force as lead service. The Joint STARS system provides real-time wide area surveillance of the battlefield and rear echelons. Joint STARS is unique because it detects and tracks enemy armor, vehicles, and troops over a wide-area in real-time using moving target indicator (MTI) and synthetic aperture radar (SAR) techniques. Joint STARS also provides precise real-time targeting information to direct attack aircraft, friendly artillery, and standoff missile batteries thereby reducing interdiction missions. Joint STARS unique capabilities can give the Corps Commander a near real-time look at enemy first and second echelon force buildups, force movements, and the enemy's scheme-of-maneuver on the battlefield. This early information on the enemy's battle plan will allow friendly forces to act before the enemy plan is executed and maneuver with economy of force to engage the enemy at a time and place of the Corps Commander's own choosing. There is no antecedent system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Joint STARS Program resulted from a May 82 OSD/USDRE memorandum directing Air Force lead of a joint program with the Army to develop a single multi-mode target acquisition and weapon guidance system. Joint STARS was organized from PAVE MOVER and Standoff Target Acquisition System Program Offices. The Full Scale Development (FSD) contract for the airborne segment using the E-8A, a Boeing 707-300 series aircraft converted to military use, was awarded to Grumman Aerospace Corporation in Sep 85. The first Joint STARS FSD aircraft was delivered in Jul 87 and an OSD-directed Operational Utility Evaluation concluded the system would meet requirements.

The first flight test and the System Preliminary Design Review took place in Apr 88, followed by the Milestone IIB decision in Jul 88 which approved procurement of 21 new 707 aircraft as well as self defense and reliability improvements. In Dec 88 the first increment

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Joint STARS, December 31, 1995

7a. (U) Program Highlights (Cont'd):

of the Critical Design Review (CDR) was conducted and an operating radar was flown for the first time. An Acquisition Decision Memorandum in Nov 89 directed that used 707 aircraft, vice new, be used for the Joint STARS platform.

The Follow-on FSD (FOFSD) contract, which included a third FSD aircraft in a production configuration, was awarded in Nov 90. Both E-8A test aircraft and six Ground Station Modules (GSMs) were successfully deployed to Saudi Arabia for Desert Shield/Storm Jan-Mar 91.

Robins AFB, GA was selected as the Main Operating Base (MOB) in Apr 91. Program Management Directive 21, dated 29 Jul 91, reduced the program from 21 to 19 aircraft. A System Level Performance Evaluation in Sep 91 supported the exit criteria for an advance buy decision in Jan 92. A Nov 91 Four Star Summit addressed lessons learned in Desert Storm and the requirement for development and production representative aircraft to be maintained in a condition that would allow for deployment of two aircraft within 60 days to support contingency requirements.

The FOFSD System CDR was completed in Feb 93 leading to Defense Acquisition Board (DAB) authorization of three Low Rate Initial Production (LRIP) lots in May 93. Lot I full procurement contract was awarded in May 93 and Lot II Advance Buy in Jun 93. A major benchmark was reached in Nov 93 with the official delivery of two E-8A systems to the government. The E-8C first flight took place in Dec 93, after the 707-300 was refurbished and modified to the production configuration.

In Mar 94 the E-8C Follow-on Full Scale Development (FOFSD) aircraft flew its first system flight, demonstrating system capability in a modified sub-system configuration. Air Worthiness Testing was completed on an E-8A aircraft, configured like an E-8C, at Edwards AFB, CA in Jun 94.

The Low Rate Initial Production (LRIP) Lot II Full Procurement Contract was definitized in Jun 94 and an upgrade to the Tactical Digital Information Link (TADIL-J) was awarded in Jul 94.

An E-8A aircraft deployed to Europe in Oct 94 and successfully demonstrated the Joint STARS system to NATO decision makers. The FY95 Appropriation Bill provided \$99.9M to buyout and store up to 12 aircraft, allowing the program to purchase the best available airframes in the best possible market conditions.

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Joint STARS, December 31, 1995

7b. (U) Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
The commanders of ACC and Army's TRADOC held a Four Star General Officer Review of the program in Jan 95. They are committed to the joint approach for development, fielding and operations.

In Feb 95, all flight testing in support of the Full Scale Development (FSD) was completed, clearing the way for the close-out of the ten year old FSD contract. The FSD close-out proposal was received and negotiated, paving the way for close-out of the FSD contract.

The Follow-On Full Scale Development (FOFSD) team completed Contractor Development Test and Evaluation (CDT&E) and Government Development Test and Evaluation (GDT&E) flight testing to achieve the DT&E Complete APB Milestone in Sep 95. The MOT&E certification briefing was completed in Oct 95 and the PEO subsequently declared the system ready for MOT&E. The MOT&E Start Milestone was achieved in Dec 95 with AFOTEC's formal acceptance of the weapon system for MOT&E.

The production team purchased three Canadian aircraft, the first of which was delivered to Grumman in Jun 95. Lot III was definitized, the Lot IV Long Lead Exit Criteria were satisfied and the Lot IV Long Lead contract was awarded in Jul 95. Dr. Kaminski approved the redesignation of Lot IV as LRIP and award of Lot V advanced procurement subject to Joint STARS satisfying exit criteria. An Acquisition Program Baseline (APB) was submitted and approved to change the Full Rate Production (FRP) Contract Award Milestone schedule to Jun 97/Nov97 (objective/threshold). The first production aircraft completed its first Functional Check Flight (FCF) in Aug 95 and was delivered to Melbourne in Sep 95 for integration of the Prime Mission Equipment (PME).

Supportability activities including stand-up of the 93rd Air Surveillance Wing continued throughout the year to meet the numerous upcoming Supportability Milestones. The joint Government/Contractor Team worked to define detailed schedule mileposts and linkages to mitigate schedule risks. The Flight Crew Training System (FCTS) Critical Design Review (CDR), held in Jul 95, identified delays in hardware integration and software development which have jeopardized the ability to meet the Flight Simulator Delivery Milestone. A Program Deviation Report was submitted to the Service Acquisition Executive (SAE) in Dec 95 for this APB milestone breach.

Joint STARS participated in the Paris Air Show in Jun 95. The aircraft was successfully demonstrated to more than 260 distinguished visitors. That same month, it was also demonstrated to the NATO

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7b. (U) Program Highlights (Cont'd):

National Armament Directors in Colorado Springs, CO. In Oct 95, Joint STARS supported the "Day at Sea" demonstration for the Secretary of Defense and NATO Defense Ministers on the USS Mt Whitney and USS Enterprise where the Joint STARS team successfully displayed Joint STARS data from a ship-mounted Ground Station Module (GSM) shelter and provided briefings for the Defense Ministers and over one hundred high level distinguished visitors. Efforts to support NATO Alliance Ground Surveillance (AGS) continued throughout the year. Phase I Interoperability Study was awarded to Northrop-Grumman.

On 14 Dec 95, one E-8A and one E-8C were deployed to Rhein-Main AB to support Operation JOINT ENDEAVOR in response to a 2 Dec 95 Chairman of the Joint Chiefs of Staff (CJCS) tasker. The 4500th Joint STARS Squadron (provisional) was established and the deployment Initial Operating Capability (IOC) was declared on 27 Dec 95 in theater. The CONUS MOT&R was cancelled. MOT&R will be accomplished in theater as a secondary objective to the operational mission.

The Joint STARS program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --

The Joint STARS 93rd Air Control Wing was activated at Robins AFB on 29 Jan 96. F1 Aircraft was delivered to the Government with DD250 on 4 Mar 96. Over 75 sorties have been completed in support of Operation JOINT ENDEAVOR. Planning and preparation have begun to redeploy the aircraft, personnel and equipment back to Melbourne, FL at the end of Mar 96.

8. (U) Threshold Breaches:

There is a cost breach and several schedule breaches to the Defense Acquisition Executive (DAE) Acquisition Program Baseline (APB) dated 2 Oct 95. Program Deviation Reports were submitted on 21 Dec 95 and 15 Feb 96; a baseline change request is underway.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone IIA	SEP 85	SEP 85	SEP 85
FSD Contract Award	SEP 85	SEP 85	SEP 85
Preliminary Design Review (PDR)	MAY 86	N/A	MAY 86
Hardware			

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
PDR Software	MAR 87	N/A	MAR 87
Critical Design Review (CDR) Hardware	DEC 86	N/A	DEC 86
First Test Flight	APR 88	APR 88	APR 88
Milestone IIB	APR 88	APR 88	APR 88
System CDR	NOV 88	NOV 88	NOV 88
Contractor Flight Test Start	APR 89	APR 89	APR 89
Operational Field Demo I	N/A	JUL 90	SEP 90
System-level Perf. Verf.-start	NOV 90	SEP 91	OCT 91
DT&E Start	FEB 91	JUN 91	OCT 91
Milestone IIIA	DEC 91	N/A	N/A
DAB Program Review, LRIP	N/A	MAR 93	MAY 93
Software Support Facility Delivery (MSSP Phase I)	N/A	MAY 96	JUL 96 (Ch-1)
Flight/Mission Simulator Delivery (MCTC Phase I & J-FCTS Phase I)	N/A	MAY 96	TBD (Ch-2)
DT&E Complete (FOFSD)	N/A	JUN 95	SEP 95
MOT&E			
Start	N/A	JUN 95	NOV 95
Complete	N/A	FEB 96	APR 96
Milestone III	N/A	JUN 96	AUG 96
Full Rate Production Contract Award	N/A	JUN 97	NOV 96 (Ch-3)
Self Defense Suite (SDS) Flight Test	DEC 92	N/A	N/A
SDS Production Decision	OCT 93	N/A	N/A
First Aircraft Deliver to TAC	MAR 94	N/A	N/A
First Aircraft Delivery to ACC	N/A	FEB 96	MAY 96 (Ch-4)
First Training Squad Ready for Trng	N/A	MAR 96	TBD (Ch-5)
Depot Support Date	N/A	JAN 96	TBD (Ch-5)
First SDS Installation (Group A)	JAN 95	FEB 96	FEB 96
Required Assets Availability (RAA)	N/A	MAY 96	TBD (Ch-5)
Organic Support Capability	N/A	MAR 97	TBD (Ch-5)
IOC	SEP 96	MAR 97	TBD (Ch-5)
Mature Reliability	N/A	SEP 98	SEP 98
Last Aircraft Delivery	SEP 00	N/A	N/A
Follow-On OT&E Start	N/A	SEP 99	SEP 99

b. (U) Previous Change Explanations --

Delay in SDS program due to reduction in funding by PBD 604. SLPV and GDT&E/IOT&E rescheduled to agree with OCT 89 DAB restructured program. Milestone III broken out into IIIA (Low Rate Production) and IIIB (Full Production). Milestones were TBD as the Joint STARS System could not meet ADM directed schedule requirements with the inadequate funding directed in the FY 91 Amended President's Budget.

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9b. (U) Schedule (Cont'd):

Operational Field Demo milestone added to SAR reporting. Milestones reported as TBD were changed to reflect FY92/93 President's Budget. SLPV estimate changed from Mar 91 to Oct 91 to reflect actual start date. DT&E/IOT&E milestone changed from Jun 91 to Oct 91 to reflect actual start date. The "DT&E/IOT&E START" milestone has been replaced by four separate new milestones: "DT&E START, DT&E COMPLETE, MOT&E START, and MOT&E COMPLETE" per the recommendation of DDDR&E (T&E). Per 5000.2, Milestone IIIA has been changed to DAB Program Review, LRIP. "Software Support Facility Delivery" changed from Mar 95 to May 96 due to restructuring and rephasing resulting from the FY94 Amended President's Budget. Interim Contractor Support will be used to provide alternate support until the facility is delivered. The "Software Support Facility Delivery" has been defined as "Mission Software Support Facility (MSSF) Phase 1". The "Flight/Mission Simulator Delivery" has been defined as the "Mission Crew Training Capability (MCTC) Phase 1" and the "Joint Flight Crew Training System (J-FCTS) Phase 1". Dates have been changed from Dec 95 to May 96 as a result of the above restructuring/rephasing. Per 5000.2, "Milestone IIIB" has been changed to "Milestone III". The "Self Defense Suite (SDS) Flight Test" milestone has been deleted. Due to funding constraints, SDS now consists primarily of incrementally phased situation awareness functionality. The "Self Defense Suite (SDS) Production Decision" milestone has been deleted since SDS is an integral part of Joint STARS production decision. "First A/C delivery to ACC" (changed from TAC) from Sep 95 to Feb 96, "First Training Squadron ready for Training" changed from Dec 95 to Mar 96, and "Depot Support Date" changed from Dec 95 to Jan 96 due to delays in E-8A testing, delays in simulator deliveries, and budgetary constraints, respectively. "SDS Test Complete" has been deleted and replaced with "First SDS Installation", defined as group A installation delivered in the first production aircraft. "PMRT" has been deleted under Integrated Weapon Systems Management (IWSM) concept. The "Last Aircraft Delivery" has been deleted to match approved Acquisition Program Baseline. RAA defined as being ready to execute maintenance concept as specified in the Integrated Logistics Support Plan. As a result of the May 93 LRIP Review, the Approved Program added the following Milestones: MOT&E Start; MOT&E Complete; Milestone III; Full Rate Production Contract Award; First Aircraft Delivery to ACC; Organic Support Capability; and Follow on OT&E Start. Flight/Mission Simulator Delivery changed from May 96 to Jul 96 due to delay in Flight Crew Trainer contract award. DT&E Complete changed from Dec 94 to Sep 95, due to software integration development problems on the E-8C and limited radar assets shared with E-8A. This delay changed MOT&E Start from Apr 95 to Nov 95; MOT&E Complete from Dec 95 to Apr 96, compressing MOT&E to five months; and Milestone III changed from Jan 96 to Aug 96.

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9c. (U) Schedule (Cont'd):

c. (U) Current Change Explanations --

(Ch-1) Software Support Facility Delivery changed from May 96 to Jul 96 because of delays in the delivery of the Software Maintenance System and Mission Support Subsystem caused by additional support needed for contingency training and integration of last E-8C software upgrades.

(Ch-2) Flight Mission Simulator Delivery changed from Jul 96 to TBD because the contractor, Dual Inc., underestimated the software development required to build an E-8C Flight Simulator. The Dec 95 Program Deviation Report outlines this breach. The Current Estimate is being revised.

(Ch-3) Full Rate Production Contract Award changed from Jun 96 to Nov 96 with the DAE approved redesignation of Lot IV as an LRIP lot.

(Ch-4) With ACC's concurrence, First Aircraft Delivery to ACC changed from Feb 96 to May 96 to support tech order verification.

(Ch-5) First Training Squadron Ready for Training changed from Mar 96 to TBD because of a nearly one year schedule delay of the Follow-On Full Scale Development effort. This was due to program schedule adjustments caused by funding shortfalls and the use of development and production assets to support Joint STARS deployment to Operation JOINT ENDEAVOR. Impacts also delayed the following:
Depot Support Date from Jan 96 to TBD
Required Assets Availability from May 96 to TBD
Organic Support Capability from Mar 97 to TBD and
IOC milestones from Mar 97 to TBD
A Program Deviation Report (PDR) was submitted 15 Feb 96. A baseline change request is underway.

d. (U) References --

(U) Development Estimate:
ADM dated 5 Jul 88, subject "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum".

(U) Approved Program:
Approved Acquisition Program Baseline dated October 02, 1995.

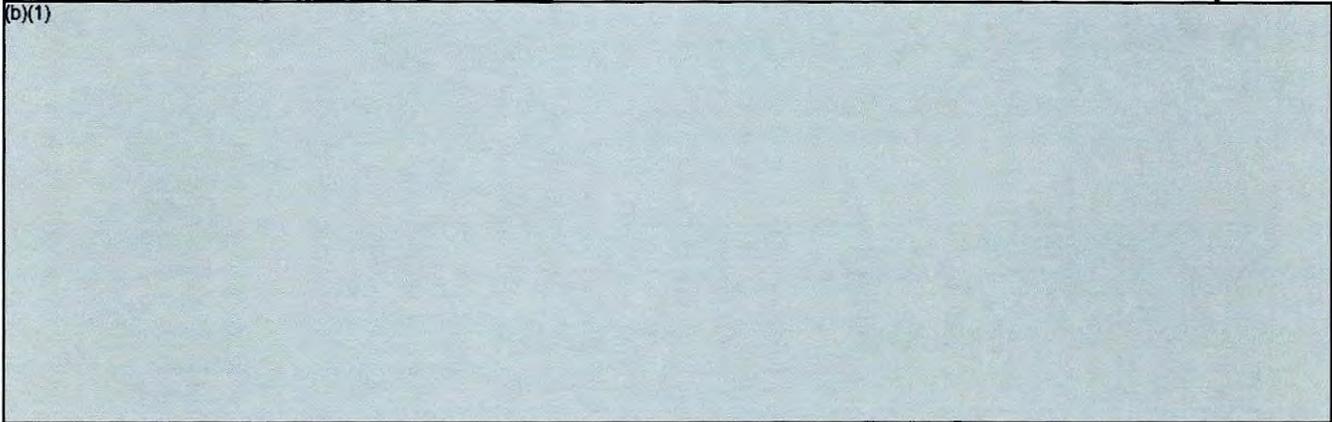
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10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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MTI detection radial
velocity (km/hr)

(b)(1)



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10a. (U) Performance Characteristics (Cont'd):

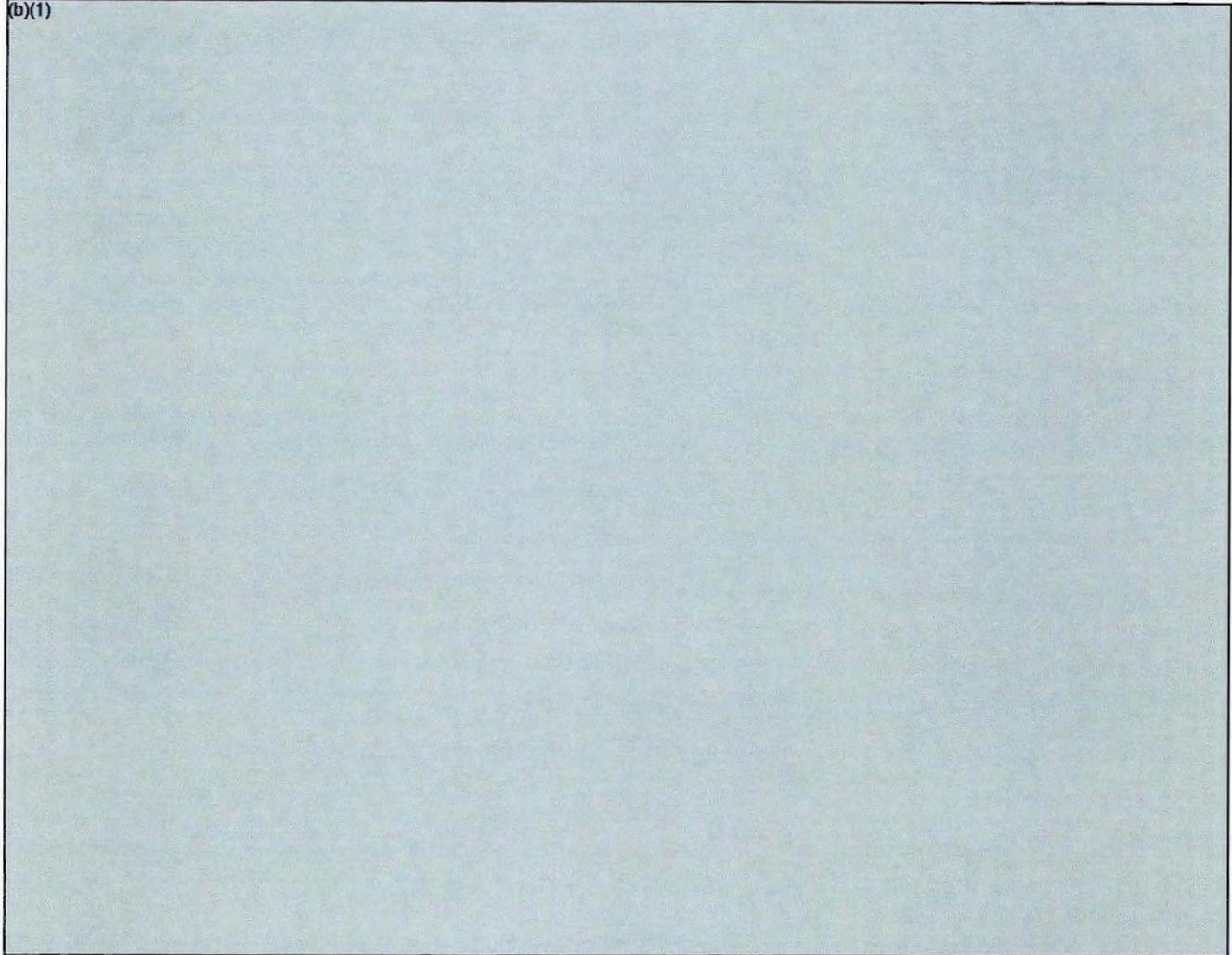
DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)			

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10a. (U) Performance Characteristics (Cont'd):

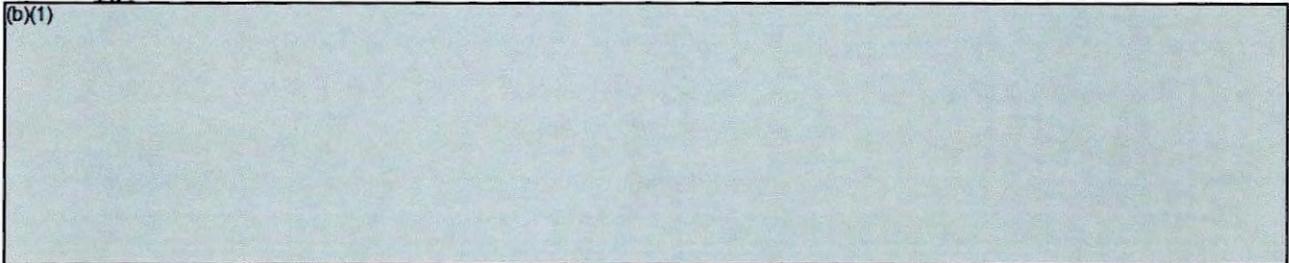
DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
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(b)(1)

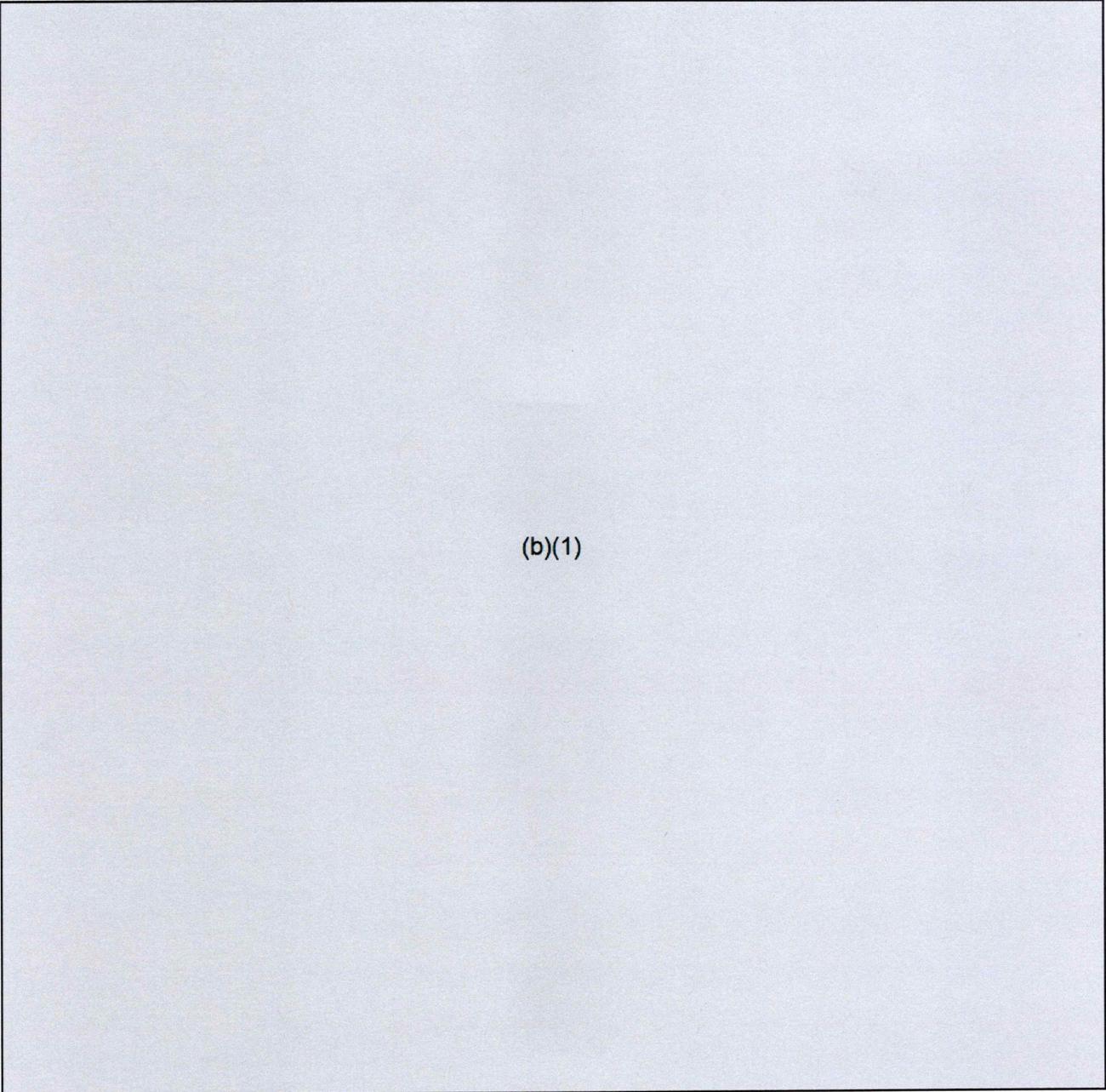


(U) *NOTE- The following is required information needed to fully understand the data located in the Performance Characteristics Section 10.

(b)(1)



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(b)(1)

(U) For Fix Rate and Break Rate: Demonstrated performance (simulated) values are based on DT&E Report for Joint STARS (S) dated 7 Apr 93.

(U) For Communications, Total UHF/Full anti-jam capable: Current Objective = 12/8; Current Threshold = 12/4.

(U) For Comm, Total HF: Current Objective = 3, Current Threshold =

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10a. (U) Performance Characteristics (Cont'd):

2.

(U) For Comm, Total VHF/SINGARS: Current Objective = 5/4; Current Threshold = 3/0.

(U) For Comm, SATCOM: Current Objective = 1; Current Threshold = 0.

(U) For Mission Reliability: Current Objective = 0.88; Current Threshold = 0.78.

(U) For Sortie Generation Rate: Current Objective = 1.00; Current Threshold = 0.80.

b. (U) Previous Change Explanations --

Past estimates have met threshold values set forth in DAR approved APBs dated 27 Oct 89, 6 Mar 90, and 26 May 93. Due to the Four Star Summit, the following characteristics have been deleted and are no longer reported: MTI detection radial velocity-max radial velocity, Reliability - MTBCF, Integrated fault detection/isolation, Attacks, Track Capacity. Due to the Four Star Summit, the following characteristics have been added: SAR CEP, Communications, Mission Reliability Rate, and Sortie Generation Rate.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

ADM dated 5 Jul 88, subject "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum".

(U) Approved Program:

Approved Acquisition Program Baseline dated October 02, 1995.

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11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1448.2	2431.7	2529.7
Procurement	3192.8	3137.7	3510.5
Recurring	(2481.1)		(0.0)
Non-Recurring	(182.7)		(0.0)
Recurring			(2721.7)
Non-Recurring			(36.8)
Total Flyaway	(2663.8)		(2758.5)
Other Wpn Sys	(286.4)		(372.1)
Peculiar Support	(0.0)		(28.8)
Initial Spares	(242.6)		(351.1)
Construction (MILCON)	87.8	104.6	79.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 83 Base-Year \$	4728.8	5674.0	6119.2
Escalation	2013.1	2924.0	3232.4
Development (RDT&E)	(315.0)	(806.6)	(872.3)
Procurement	(1658.1)	(2063.0)	(2319.5)
Construction (MILCON)	(40.0)	(54.4)	(40.6)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	6741.9	8598.0	9351.6
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	21	19	19
Total	21	19	19

The DAB Program Review for LRIP (May 93) approved a total of five aircraft in three lots. The March 4, 1994 Under Secretary of Defense Joint STARS Program Memorandum increased the total LRIP program to six aircraft in three lots. The 15 Jun 95 Under Secretary of Defense Joint STARS Program Memorandum approved an increase in the total LRIP program to eight aircraft in four lots. This increase was prompted by multi-service operational testing and evaluation (MOT&E) slippages and the desire to preserve production continuity.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

ADM dated 5 Jul 88, subject "Joint Surveillance Target Attack Radar System: Milestone IIB Acquisition Decision Memorandum".

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11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

Approved Acquisition Program Baseline dated October 02, 1995.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (OCT 95 APB)	Percent Change
a. (U) Total Program			
(1) Cost (BY83\$)	6119.2	5674.0	
(2) Quantity	19	19	
(3) Unit Cost	322.06	298.63	7.85
b. (U) Procurement			
(1) Cost (BY83\$)	3510.5	3137.7	
(2) Quantity	19	19	
(3) Unit Cost	184.76	165.14	11.88

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1763.2	4850.9	127.8	6741.9
Previous Changes:				
Economic	+29.6	+401.6	+7.4	+438.6
Quantity	-	-370.1	-	-370.1
Schedule	+504.3	+259.6	-	+763.9
Engineering	+371.8	-732.9	-	-361.1
Estimating	+647.8	+506.7	-9.8	+1144.7
Other	-	-	-	-
Support	-	+392.9	-	+392.9
Subtotal	+1553.5	+457.8	-2.4	+2008.9
Current Changes:				
Economic	-30.7	-213.4	-3.8	-247.9
Quantity	-	-	-	-
Schedule	-	31.6	-	+31.6
Engineering	-	-	-	-
Estimating	116.0	773.4	-2.0	+887.4
Other	-	-	-	-
Support	-	-70.3	-	-70.3
Subtotal	+85.3	+521.3	-5.8	+600.8
Total Changes	+1638.8	+979.1	-8.2	+2609.7
Current Estimate	3402.0	5830.0	119.6	9351.6

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1983 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	1448.2	3192.8	87.8	4728.8
Previous Changes:				
Quantity	-	-234.2	-	-234.2
Schedule	+308.7	+67.4	-	+376.1
Engineering	+250.2	-412.3	-	-162.1
Estimating	+453.0	+256.1	-7.5	+701.6
Other	-	-	-	-
Support	-	+245.7	-	+245.7
Subtotal	+1011.9	-77.3	-7.5	+927.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	69.6	417.7	-1.3	+486.0
Other	-	-	-	-
Support	-	-22.7	-	-22.7
Subtotal	+69.6	+395.0	-1.3	+463.3
Total Changes	+1081.5	+317.7	-8.8	+1390.4
Current Estimate	2529.7	3510.5	79.0	6119.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic inflation indices.

Schedule: Program rephased from FY94 to FY98 to accommodate reductions. Changes due to aircraft reductions and additional funding for program completions.

Engineering: Revised FSD requirements for used vs. new aircraft.

Estimating: Adjusted for current and prior year escalation changes. Budgetary reprogrammings and reductions. Revised estimate to reflect current funding. Increased requirements from realignment of Oct 89 DAB to FY92/93 PB. Realignment of funds for contract management of Defense Business Operating Fund (DBOF). Reduction of Program contract

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13b. (U) Cost Variance Analysis (Cont'd):

support. Reprogramming of FY91 funds to the Sensor Fuzed Weapon Program. Addition of FY99 funding to extend Program operations. Reduction of FY92 funds to reflect contract manpower travel savings and reduction of FY90 to reflect actual costs. Ground Support Systems (GSS) rephased due to FY93 appropriation bill cut. FY94 BES Realignment of GSS and Product Improvement funds. SDS and maintenance Trainers rephased due to funding constraints in FY92 and FY93. Rephasing of Product and Readiness Improvement and deletion of CTOS restructure, DSD Blk 2B, 2nd & 3rd A/C Instrumentation. Additional programmed funds for Product Improvement, GSS, SDS, Misc efforts (RIP, Flight Crew, ECO), and SPO. FY94 appropriation bill cut reduced Engineering Change Orders. Reprogramming of FY90 and FY91 funds for FSD settlement plus-up. Across-the-board Air Force cuts. Realignment of funding from FY98/99 to FY95-97 to match DAB estimate. FY92 reprogramming for Small Business Innovative Research. Rephasing of FY95-00 effort due to inflation shortfall. FY94 reprogramming (SIBR), F-22UR and classified program. FY95 Congressional reduction (delayed Constant Source development, descoped Post Delivery Test Support, and added risk to contingency support). FY95 reprogramming for SBIR. Reduction in funding to support FY00-01 P3I effort. Re-estimating of FY96-00 due to inflation.

Procurement

Economic: Revised economic inflation indices.
Quantity: Reduction from 21 to 19 aircraft (IAW PMD 21, dtd 29 Jul 91).
Schedule: Deferral of two units to FY98. Realigned production profile from FY91-FY98 to FY92-FY99. Buy profile of 17 aircraft plus two refurbished stretched to FY00. Program schedule rephased per AFSARC direction extending program from FY00 to FY03.
Engineering: Decrease in production requirements due to change from new to used aircraft platform.
Estimating: Refinement and rephasing of program estimate. Revised estimate to reflect current funding. Increase in program estimate for learning as a result of decreased quantities. Realignment to support acceleration of advanced procurement for two aircraft. Realignment of funds for contract

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13b. (U) Cost Variance Analysis (Cont'd):

management of DBOF. Reduction of program contract support. Realignment of FY98 funding to reflect actual requirement. Realignment of Ground Support Systems effort from Flyaway to Other Weapon Systems. Funding changes in advance procurement in FY93 and out. Reductions to Self Defense Suite due to funding constraints. Program estimate for Flyaway increased to match revised schedule, and estimate for SDS revised. Revised entries/estimate to 31 Dec 91 SAR to correct variance categories. Adjusted for current and prior year escalation. Funding changes in advance procurement due to change in buy profile for FY96, 97, 00 and 01. Database plus-up for inflation estimate. Increase of one aircraft in FY94. FY95 Congressional plus-up of airframe buy-out. General reduction/acquisition reform. Adjustment to flyaway estimate due to inflation adjustment. AF adjustment of savings from advanced buy plus-up (FY96-01). Reduction to ECOs due to decrease in funding for risk. Reallocation of costs between Flyaway and Other Weapon System to account for advance buy debit/credit.

Support:

Increase to initial spares and support equipment associated with the realigned production profile. Decrease in initial spares and support equipment requirements associated with the change in new vs. used platforms. Realignment of initial spares funds for Stock Fund implementation. Reprogramming of common support equipment funds to Joint STARS. Realignment of Ground Support Systems effort from Flyaway to Other Weapon Systems. Program estimate for other costs (training, GSS, data) revised. Additional funds required for ICS in FY99 and FY00 due to revised production schedule. Reestimate of Peculiar Support Equipment (PSE) revised for current program. Increase to initial spares due to schedule extension. Rephasing of FY95-00 effort due to inflation shortfall. Reduction in support equipment due to across-the-board Air Force cuts. Across-the-board AF adjustment to initial spares. Re-estimating of FY96-05 support efforts for inflation. Reallocation of costs between Flyaway and Other Weapon System to account for advance buy debit/credit. Adjustment for FY00-05 Initial Spares Common Support Equipment, Ground Systems and Data. FY96 President's Budget changes in Initial Spares and Interim Contract Support (ICS).

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13b. (U) Cost Variance Analysis (Cont'd):

MILCOM

Economic: Revised economic inflation indices.
Estimating: Revised estimate to reflect current funding. Budgetary reduction of FY93 funds. Revised estimate due to consolidation of Main Operating Base (MOB) with depot. Reprogramming Depot ATF funding to Joint STARS. Addition of FY98 funding. Adjustment for current and prior year escalation. FY93 funding restored by Congress. Increase in funding for Main Operating Base (MOB) due to increase in facilities. Forward Operating Base changed to Forward Operating Locations. Decrease due to slower operational ramp-up. Decrease to program content due to increased inflation. Reduction in funding for Forward Operating Locations.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) EDT&E		
Revised escalation indices (Economic)	N/A	-30.7
Adjustment for current and prior year escalation (Estimating)	+6.3	+9.3
FY95 reprogramming for Small Business Innovative Research (SBIR), must-pay bills, S&A/AQ cut for computer support, and Titan IV Hurricane Aaron (Estimating)	-4.1	-6.0
FY96 Conference Mark for Tech Order over run (Estimating)	-8.0	-12.0
FY96 Conference Mark for Comm plus-up (Estimating)	+13.3	+20.0
Additional funds for NATO (Estimating)	+7.1	+10.8
EDT&E O&M reductions (Estimating)	-1.7	-2.7
Reductions for P3I Forward Operating Locations (FOL) (Estimating)	-14.7	-24.4
Increase for Improved Data Modem and UHF SATCOM (Estimating)	+43.5	+68.0
FY96 reductions for FFRDC, General Reductions, SBIR, Bosnia and transfer of NATO to separate PE (Estimating)	-11.5	-17.2
Budget reduction for non-pay inflation cut (Estimating)	-26.0	-40.7

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Additional funds in FY02-03 for E-8C Follow-On Test Support (FOTS) and program support (Estimating)	+51.9	+89.5
Re-estimating of FY97-01 due to inflation (Estimating)	+13.5	+21.4
RDT&E Subtotal	+69.6	+85.3
(2) Procurement		
Revised escalation indices (Economic)	N/A	-213.4
Schedule change associated with revised annual buy quantities (FY99-02) (Schedule)	N/A	+31.6
Adjustment for current and prior year escalation (Estimating)	+36.3	+57.1
FY93 funds reprogrammed to ANACS and to cover closed "M" account bill (Estimating)	-6.0	-9.0
Common AGE Spares increase (Support)	+2.6	+4.4
Rephasing Deployable Mission Support Capability (DMSC) from FY95 to FY97 (Support)	+0.4	+2.0
Changes in database for Spares outlay rates (Support)	-4.7	-6.3
Increase for Improved Data Modem and UHF SATCOM (Estimating)	+19.6	+33.7
FY96 Congressional Mark against ECOs (Estimating)	-10.7	-17.2
Stock fund spares increase, database clarifications, and general Omnibus reductions (Support)	+1.0	+1.5
Additional funds in FY02-04 for flyaway (Estimating)	+359.6	+661.2
Additional funds in FY02-04 for initial spares and other weapon systems support costs (Support)	+70.1	+130.8
Changes in program office re-estimate (adjusted costs between flyaway and other weapon system) to correct previous SAR (Estimating)	+39.6	+114.7
Changes in program office re-estimate (adjusted costs between flyaway and other weapon system) to correct previous SAR (Support)	-39.6	-114.7

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment to flyaway due to non-pay inflation reduction (Estimating)	-111.1	-223.5
Adjustment to other weapon system due to non-pay inflation reduction (Support)	-21.1	-35.4
FY96 Congressional reductions for Bosnia and general reductions (Support)	-10.0	-16.1
Inflation cuts/general reductions to spares (Support)	-21.4	-36.5
Re-estimating of FY97-04 efforts for inflation (Estimating)	+90.4	+156.4
Procurement Subtotal	+395.0	+521.3
(3) MILCON		
Revised escalation indices (Economic)	N/A	-3.8
Adjustment for current and prior year escalation (Estimating)	+0.9	+1.3
Change in funding for Forward Operating Locations (FOL) (Estimating)	-3.8	-5.8
Change in program content due to inflation (Estimating)	+1.6	+2.5
MILCON Subtotal	-1.3	-5.8

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. (U) Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
571.4	-3.4	-430.2	2.9	95.9	45.7	--	38.7	-250.4	321.0

Joint STARS, December 31, 1995

15. (U) Contract Information (Cont'd):

Station (ATWS), 3-210 Aircraft Subsystem, and 3-460 Lab Upgrades. The Cost Variance was -\$5.3M after the rebaseline and has since increased slightly to -\$6.5M. Some problems by the Systems/Test Engineering in Software (3-300) and Software Engineering in ATWS (3-110) and Software (3-300) have contributed to the increase in Cost Variance.

			Initial Contract Price		
(U) Ground Support Systems:			Target	Ceiling	Qty
Grumman Aerospace, Melbourne, FL					
F19628-93-C-0067, CPIF			\$79.0	N/A	1
Award: October 28, 1993					
Definitized: October 28, 1993					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$120.0	N/A	2	\$117.2	\$117.2	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$3.2	\$1.1	
Cumulative Variances To Date (12/31/95)			\$6.4	\$-2.7	
Net Change			\$3.2	\$-3.8	

Explanation of Change:

\$526,500 was added to Contract Price Target after second award fee. ECP01, Transportable Mission Support Subsystem (TMSS), modified the contract, adding another \$40,238,499 to Contract Price Target. Contract modification also added a second deliverable. Contractor and Program Manager estimate that contract will underrun by \$3.4M at cost resulting in Estimated Price at Completion of \$117.2M. Cumulative Cost Variance improved by \$3.2M because of favorable software development performance, efficiency realized on multiple courseware projects, and savings on some common equipment. Although Cumulative Schedule Variance deteriorated by -\$3.8M, the contractor is still one month ahead of schedule to accomplish future contract milestones. The contractor has set aggressive work plan schedules with the intent of finishing the contract on or ahead of schedule.

b. (U) Procurement --			Initial Contract Price		
(U) LRIP Lot I:			Target	Ceiling	Qty
Grumman Aerospace, Melbourne, FL					
F19628-92-C-0035, FP1F OPTION			\$129.2	\$0.0	2
Award: April 24, 1992					
Definitized: May 28, 1993					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$516.4	\$557.1	2	\$536.2	\$538.9
Previous Cumulative Variances			Cost Variance	Schedule Variance
			\$-2.1	\$-15.5
Cumulative Variances To Date (11/30/95)			\$-20.7	\$-102.7
Net Change			\$-18.6	\$-87.2

Explanation of Change:

The Current Contract Target Price change of \$9.7M includes Over and Above (O&A) Refurbishments, spares, miscellaneous work requests and fee. The unfavorable Cost Variance is due primarily to higher than anticipated manufacturing costs associated with O&As and O&A support tasks, Engineering Changes and Engineering & Methods labor required to standardize engineering drawings and operations sheets for production. Government and corporate management are working to improve the O&A processes. The unfavorable Schedule Variance is due primarily to delayed vendor delivery, receipt/acceptance and material not being applied as planned. The Target Price of \$516.4 includes fee.

(U) LRIP Lot II:
 Grumman Aerospace, Melbourne, FL
 F19628-92-C-0035, FFP OPTION
 Award: June 17, 1993
 Definitized: July 14, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$75.6	N/A	2

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$443.2	N/A	2	\$452.5	\$452.5
Previous Cumulative Variances			Cost Variance	Schedule Variance
			\$-1.2	\$-1.6
Cumulative Variances To Date (10/20/95)			\$-2.8	\$-0.5
Net Change			\$-1.6	\$1.1

Explanation of Change:

The Current Target Price represents the Full Procurement of Aircraft P3 and P4 (\$358.1M), additional Over and Above Refurbishment costs, aircraft configuration update, ASIP, Work Request & Modifications, and spares. The unfavorable Cumulative Cost Variance net change reflects refurbishment and modification material received ahead of the projected cumulative spend plan, higher than anticipated overhead

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15. (U) Contract Information (Cont'd):

rates, and labor inefficiencies associated with P3 and P4 Over and Above efforts. The unfavorable Schedule Variance reflects greater than anticipated Over and Aboves for P3 and P4 and late deliveries of materials. Lot II Contract is a Firm Fixed Price Option effort. The Target Price of \$443.2M includes fee.

			Initial Contract Price		
(U) LRIP Lot III:			Target	Ceiling	Qty
Grumman Aerospace, Melbourne, FL					
F19628-92-C-0035, FFP OPTION			\$123.2	N/A	2
Award: May 10, 1994					
Definitized: August 2, 1995					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$551.2	N/A	2	\$564.8	\$564.8	
			Cost Variance	Schedule Variance	
Previous Cumulative Variances			\$0.1	\$-0.6	
Cumulative Variances To Date (12/18/95)			\$-6.2	\$-2.4	
Net Change			\$-6.3	\$-1.8	

Explanation of Change:

The Target Price change of \$428M includes Lot III Full Procurement, P6 Rewire and Configuration Update, Spares, PSE and Over and Above (O&A) Refurbishments of the P5 and P6 Aircraft. The Cumulative Schedule Variance change of -\$1.8M is attributable to O&A dispositioning and parts identification and verification being behind schedule which effects Refurbishment, Reinstallation, Aircraft Modification. Also, late release of engineering drawings influenced the Cumulative Schedule Variance change. Management has implemented a new Aircraft positioning flow with a dedicated team assigned to each position to correct these variances. The engineering drawings have all been released. The Cumulative Cost Variance change of -\$6.3M is attributable to poor work efficiency resulting from engineering change orders, material shortages, out of sequence work arounds, and the unfavorable labor rates currently being used. This contract is a Firm Fixed Price contract. The Target Price of \$551.2M includes fee.

			Initial Contract Price		
(U) LRIP Lot IV:			Target	Ceiling	Qty
Grumman Aerospace, Melbourne, FL					
F19628-95-C-0169, FFP			\$0.0	\$0.0	2
Award: July 21, 1995					
Definitized: N/A					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$0.0	N/A	2	\$163.8	\$163.8
Previous Cumulative Variances			Cost Variance	Schedule Variance
Cumulative Variances To Date			\$0.0	\$0.0
Net Change			\$2.3	\$-0.6
			\$2.3	\$-0.6

Explanation of Change: None.

The Initial and Current Target Price (0.0) reflects an undefinitized Advance Buy period for Lot IV. However, the Not To Exceed and Estimate at Complete (EAC) price of \$163.8M includes Lot IV Advance Buy (\$143.7M) and Over and Above (O&A) Refurbishments (\$20.1M) of the P7 and P8 Aircraft. The favorable Cost Variance reflects impact of job shoppers and slow start of program management. The Lot IV contract is a Firm Fixed Price (FFP) contract.

This is the first time this contract is being reported in the SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 65.2% (15 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 57.0% (\$5330.2 / \$9351.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY82-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2004)	Total
RDT&E	2597.5	165.0	207.3	432.2	3402.0
Procurement	1969.5	523.0	559.1	2778.4	5830.0
MILCON	68.3	6.9	18.6	25.8	119.6
O&M	-	-	-	-	-
Total	4635.3	694.9	785.0	3236.4	9351.6

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1982				33.5	32.6	32.6	32.6	7.6
1983				30.7	31.3	31.3	31.3	4.9
1984				38.7	41.0	41.0	41.0	3.8
1985				44.4	48.6	48.6	48.6	3.4
1986				139.3	156.1	156.1	156.1	2.8
1987				256.1	300.2	300.2	300.2	2.7
1988				274.7	330.7	330.7	330.7	3.0
1989				181.9	229.6	229.6	222.4	4.2
1990				76.2	99.1	99.1	95.3	4.0
1991				172.4	232.6	232.6	222.4	4.3
1992				242.8	337.2	337.2	337.2	2.8
1993				221.0	313.4	313.4	313.4	2.7
1994				193.2	278.8	278.8	205.2	2.0
1995				113.1	166.3	155.4	40.7	1.9
1996				109.9	165.0	22.9	1.2	2.0
1997				135.0	207.3			2.2
1998				131.5	206.4			2.3

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Than-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1999				40.4	64.8			2.2
2000				21.3	34.9			2.2
2001				21.8	36.6			2.2
2002				30.7	52.6			2.2
2003				21.1	36.9			2.2
Subtot				2529.7	3402.0	2609.5	2378.3	

Obligation and Expenditure rates are as of 31 Dec 95.

Appropriation: 3010 Aircraft Procurement, Air Force

1992				91.8	137.3	137.3	118.8	2.8
1993	2	21.3	297.8	404.1	613.9	589.3	439.8	2.7
1994	2		322.4	361.7	558.9	487.6	93.3	2.0
1995	2	15.5	334.9	418.4	659.4	521.1	14.3	1.9
1996	2		258.3	324.6	523.0	1.1		2.0
1997	2		286.2	339.5	559.1			2.2
1998	2		227.4	295.7	497.6			2.3
1999	1		197.1	269.4	463.4			2.2
2000	2		227.1	284.7	500.5			2.2

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY83 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2001	2		210.9	252.6	454.0			2.2
2002	2		359.6	398.5	731.6			2.2
2003				46.0	86.3			2.2
2004				23.5	45.0			2.2
2005								2.2
Subtot	19	36.8	2721.7	3510.5	5830.0	1736.4	666.2	

Obligation and expenditure rates are as of 31 Dec 95.

Appropriation: 3300 Military Construction, Air Force

1992				13.2	18.8	17.1	16.5	2.8
1993				7.4	10.8	10.7	8.5	2.7
1994				16.5	24.4	23.7	14.2	2.0
1995				9.5	14.3	12.9	0.3	1.9
1996				4.5	6.9			2.0
1997				11.8	18.6			2.2
1998				16.1	25.8			2.3
Subtot				79.0	119.6	64.4	39.5	
Grand								

Joint STARS, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Than-Year \$			Escl Rate (%)
		FY83 Dollars			Program	Obligated	Ex-pended	
		Source	Rec					

Appropriation: 3300 Military Construction, Air Force (Cont'd)

Total	19	36.8	2721.7	6119.2	9351.6	4410.3	3084.0	
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Obligations and expenditures are as of 31 Dec 95.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		Plan/Actual
	RDT&E	0/0
	Procurement	1/1

DD250 of P1 was completed on 4 Mar 96.

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

O&S costs were based on 19 refurbished Boeing 707 aircraft. The support concept priced assumed Government two level (organizational/depot) support of the prime mission equipment (PME). The airframe support will be Government organizational level support, a mixture of Government and contractor support for organizational (off-equipment) maintenance, and contractor support for depot level requirements. The O&S costs of the PME and airframe were estimated individually and then added together to estimate the total system level O&S costs. The PME costs were estimated using JPO Developed Repairable Support Division (RSD) Model to calculate the AF Stock Fund Life Cycle Costs. The airframe costs were estimated by the Government using the Cost-Oriented Resources Estimating (CORE) model contained in AFR 173-13, which is now AFI 65-503. The planned buy program was used to estimate the actual O&S costs. Significant O&S cost categories include: Personnel, Unit Consumption, Depot Maintenance/Contractor Support, and Sustaining

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18a. (U) Operating and Support Costs (Cont'd):

Support/Indirect Support. The O&S period for Joint STARS starts with delivery of P1 in FY96 and concludes in FY18 (Ramp Up FY96 through FY03 and Steady State FY04 through FY18). The source of the data was Program Office Estimate, 23 Mar 93.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Steady State Avg Annual 15 year per year (FY04-FY18)	Avg Annual Cost Per Antecedent
Personnel	89.5	N/A
Unit Consumption	118.6	N/A
Depot Maint/Contr Spt	54.4	N/A
Sustaining/Indirect Spt	71.8	N/A
Total	334.3	N/A

c. (U) Contractor Support Costs -- None.

Contractor Support of \$47.9M is separately identified and includes CLS for Mission Software Software Support Facility, Mission Crew Training System, Software Support Facility, Maintenance Trainers, Flight Simulator, and Aircraft.

There is no antecedent system to Joint STARS; this system is a new capability.

AF-19 SFW

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Sensor Fuzed Weapon

AS OF DATE: December 31, 1995

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CLEARED
FOR OPEN PUBLICATION

17 ^{AS AMENDED}
MAR 22 1996

1. (U) Designation and Nomenclature (Preferred Name):
Sensor Fuzed Weapon (SFW), CBU-97/B

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ASC/YH
102 W D Avenue, Suite 300
EGLIN AFB, FL 32542-6807

COL RILEY C. SHELNUTT
Assigned: February 8, 1993
AV 872-5382 COMM (904) 882-5382

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

4. (U) Program Elements/Procurement Line Items:

RDT&E:

- PE 0604602F (Shared) Project 643244
- PE 0604604F (Shared) Project 643086
- PE 0604607F Project 642961
- PE 0207320F Project 671016

96-050 T

96-C-0296

~~Classified by: SFW Security Classification Guide, 24 May 94~~
~~Declassify on: Ongoing Agency Determination Requirements~~
~~Declassify on: NND Subject to Automatic Downgrading~~

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~~SECRET~~

Sensor Fuzed Weapon, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

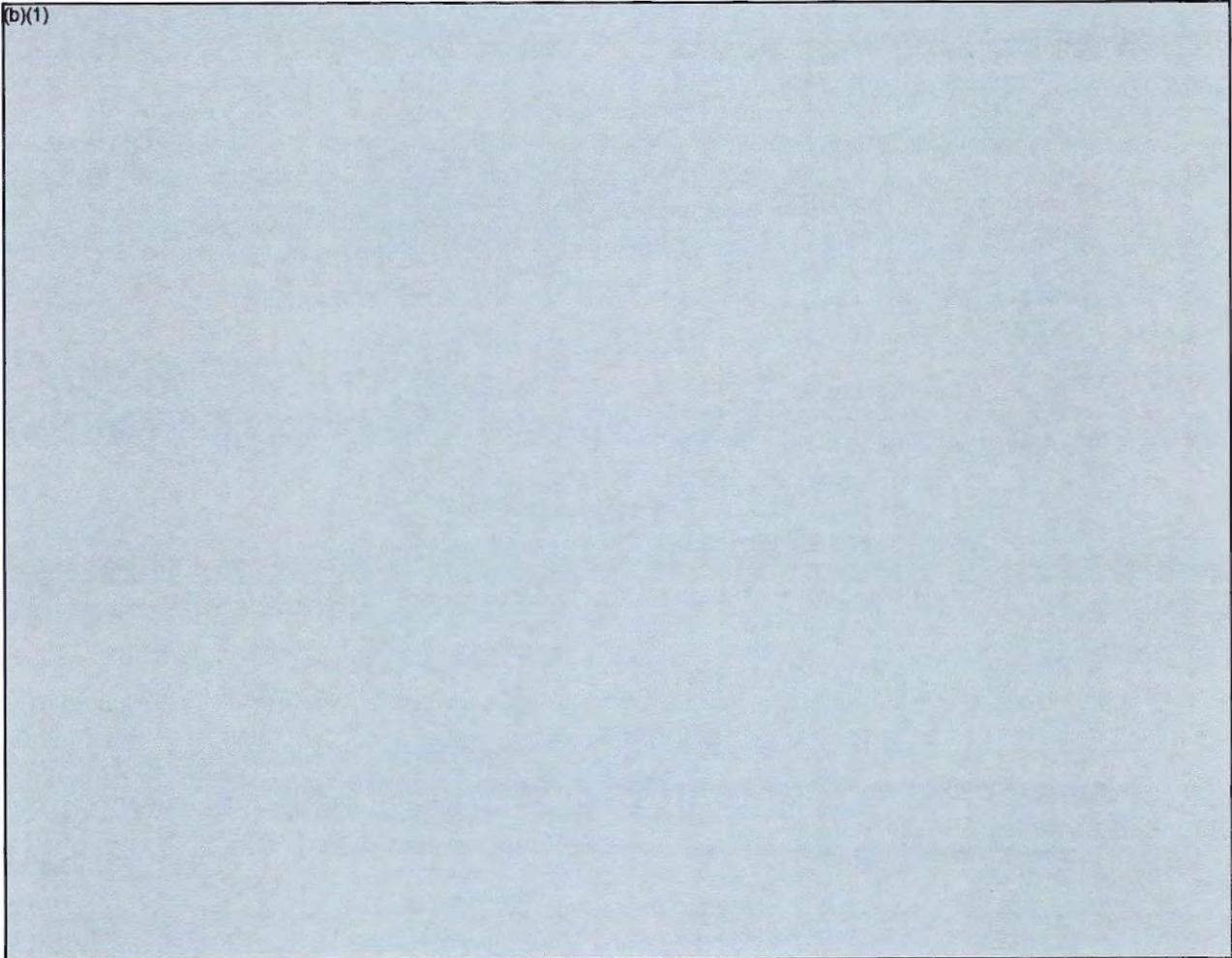
- APPN 3020 ICN 273520 (Air Force)
- APPN 3020 ICN 353520 (Air Force) (APPN 3011)
- APPN 3080 ICN 813520 (Air Force)

Due to program directed changes, FY95 and FY96 funding was transferred from APPN 3020 (Missile Procurement, AF) to APPN 3011 (Weapons Procurement, AF).

5. (U) Related Programs:

- SUU-64/B Tactical Munitions Dispenser
- CNU-411 Container
- FZU-39 Proximity Sensor
- SEEK EAGLE
- Joint Stand-Off Weapon (JSOW)
- Wind Corrected Munitions Dispenser (WCMD)

(b)(1)



(b)(1)

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

During formulation of the FY85 Program Objective Memorandum, the Air Force segregated the development of conventional submunitions from the development and integration of these submunitions into a weapon system. This decision was made to preclude termination of promising submunition designs in the event of termination of its carrier. The Risk Reduction Phase, the first of two development phases, was successfully completed in Sep 85. In Oct 85, after a successful Preliminary Design Review (PDR), SAF authorized the SFW program to proceed into Full Scale Development (FSD) in Nov 85. The Dec 86 Selected Acquisition Report (SAR) implemented the new Development Estimate Baseline.

The program experienced test failures, schedule delays, and budget changes and was restructured in Jun 89. The restructure was approved by SAF/AQ in Nov 89 and included a Production Transition Program (PTP) to reduce cost and the risk of transitioning to production. The culmination of these events resulted in a schedule breach and a Nunn-McCurdy Program Acquisition Unit Cost (PADC) breach. PTP completed Mar 93. As a result of PTP successes, the PTP configuration was introduced into the SFW baseline in Lot 1, two LRIP lots ahead of schedule.

Development Test and Evaluation (DT&E) testing began in Dec 88 and was successfully completed Apr 91. The SFW was certified ready for Initial Operational Test and Evaluation (IOT&E) by the Program Executive Officer (PEO) in Aug 90. IOT&E Phase 1 successfully completed Dec 91.

The Defense Acquisition Board (DAB) authorized Low Rate Initial Production (LRIP) in Mar 92 and directed the incorporation of a

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7a. (U) Program Highlights (Cont'd):

Producibility Enhancement Program (PEP) to further improve the producibility of the SFW design. The acquisition objective was reduced from 16,726 to 10,000 weapons resulting in a Nunn-McCurdy PAUC breach.

LRIP 1-3 contract awards occurred on schedule. LRIP 1 was awarded Mar 92 (98 weapons) and modified to incorporate LRIP 2, Jan 93 (22 weapons). LRIP 3 was awarded in Dec 93 (112 weapons).

The FY94 President's Budget (PB) reflected a quantity reduction from 10,000 to 5,000 weapons and a reduction in near-term funding. The reduced quantities and slower ramp rate resulted in a Nunn-McCurdy PAUC and an Acquisition Program Baseline (APB) Average Unit Procurement Cost (AUPC) breach.

Testing of five PTP verification units was successfully completed in Jun 93 with performance exceeding user requirements. HAVE NOTE testing, which is testing of the Bomb Live Unit (BLU)-108/B) submunition and projectile in an electromagnetic environment, successfully completed in Mar 93.

The Mar 92 Acquisition Decision Memorandum (ADM) directed a status briefing on PEP. PEP status was presented to the Office of the Secretary of Defense (OSD), Conventional Systems Committee (CSC) in Nov 93.

SFW LRIP 1 Production Qualification Tests (PQT) were successfully completed in Apr 94, with weapons exceeding user requirements and SFW officially entered production. LRIP 1 experienced a Lot Acceptance Test (LAT) failure in Jun 94. The weapon did not meet reliability requirements; however, the weapon still exceeded the user's kills-per-pass requirement. Corrective actions were implemented in a production verification unit which passed LAT requirements in Sep 94. Another test was conducted and the first lot was accepted after successful LAT. Lots 2 and 3 completed LAT in Oct and Nov 94. PEP 1 completed contractor qualification testing for the Safe and Arm device in Aug 94. PEP 2 Phase 1 completed brassboard testing of the integrated submunition electronics and Phase 2 was awarded in Sep 94. FY96 PB reduced SFW production ramp-up quantities and stretched the program two years.

b. (U) Significant Developments Since Last Report --

In Jan 95, two Lot Acceptance Test (LAT) units for the fourth lot of Low Rate Initial Production (LRIP) 1 failed to meet reliability criteria for Government lot acceptance. Despite the LAT failure, the weapons continued to exceed user kill requirements. Production was halted until corrective actions were identified and implemented.

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Sensor Fused Weapon, December 31, 1995

7b. (U) Program Highlights (Cont'd):

Deliveries resumed the end of May 95, and LRIP 1 deliveries were completed in Jun 95.

The program experienced a LAT failure for LRIP 2 (Lot 6) on 11 Jul 95. The munition failed to dispense submunitions correctly after one of the Tactical Munitions Dispenser (TMD) skin panels impacted the munitions tail upon initial opening. Corrective actions were implemented and proper TMD functioning was verified through ground and flight tests. Lot 6 was delivered to the Government in Oct 95. LAT 7 was successfully conducted in Dec 95.

Producibility Enhancement Program (PEP) 1 configuration was finalized and the first unit was delivered 5 May 95. Testing of PEP 1 units began in early Jun 95. Four tests out of a five-weapon test series have been completed. PEP 2 experienced difficulties in designing the Application Specific Integrated Circuit (ASIC). The ASIC approach was dropped in favor of a multichip-module layout. PEP 2 has started prototype manufacturing.

The SFW P3I program, which will enhance BLU-108 performance through a dual-mode sensor, multimission warhead, and an enhanced footprint, has been negotiated and will be awarded in Apr 96. The Milestone III decision was delegated to the Air Force and the Program Office initiated efforts to tailor and streamline the review process. The Milestone Decision Review was moved from Dec 95 to May 96, due to asset non-availability resulting from the LAT failure. This will allow the Director of Operational Test and Evaluation (DOT&E) sufficient time to complete the Beyond Low Rate Initial Production report.

The SFW program will satisfy all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There is a procurement cost breach (+6.6%) to the Approved AFAP Acquisition Program Baseline (APB) dated 4 Oct 93. This is due to a reduction in the annual buy profile and subsequent stretch of the program by two years. A Program Deviation Report (PDR) and Baseline Change Request (BCR) will be submitted for approval. There are no Nunn-McCurdy unit cost breaches.

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Lot 3 Contract Award Milestone III	N/A	DEC 93	DEC 93
Lot 4 Contract Award	N/A	DEC 95	MAY 96 (Ch-1)
(b)(1)			
Lot 1 Initial Production First Delivery	N/A	DEC 94	JAN 95
Lot 1 Initial Production First Delivery	N/A	JUN 94	JUN 94

b. (U) Previous Change Explanations --

The Critical Design Review (CDR) date was moved from Jul 87 to Oct 87 based on contractor hardware procurement and test delays. It was then slipped from Oct 87 to Mar 88 due to design problems on the BLJ-108/B structure and verification/validation of design improvements. DT&E/IOT&E completion slipped from Jun 89 to Apr 90 due to the CDR adjustment, the necessity to accommodate a cold weather test environment requirement and nonavailability of DT&E test assets delaying DT&E start. The Program Review (Milestone IIIA) was slipped from Nov 88 to Aug 89 due to the slip in CDR. The subsequent slip from Aug 89 to Mar 90 allowed more of the IOT&E testing to be completed prior to the Program Review. The Production Contract Award milestone was changed from Dec 88 to Dec 90 as a direct result of the slips in CDR and IOT&E. CDR was held Apr 88 with final design approval Aug 89. As a result of two test failures, design changes, schedule delays and budget impacts, the program was restructured. This restructure slipped DT&E/IOT&E completion to Jan 92 and submission of final test reports to Mar 92, DAB Program Review to Sep 91, and Production Contract Award to Dec 91. Due to the FY91 PB impact, the IOC estimate was revised by HQ ACC. IOT&E was delayed until Tactical Munitions Dispenser (TMD) anomalies found in early SKEK EAGLE testing were resolved and a plan for completing the F-16 Operational Flight Plan software was finalized. The DAB Program Review, Production Contract Award, Lot 2 and 3 Contract Awards and IOC slipped because of the desire to have a negotiated LRIP 1 contract prior to the CSC Review on 19 Dec 91 and the impact of the FY93 PB. Program Management Responsibility Transfer (PMRT) was eliminated as a milestone because it was no longer applicable following Air Force Systems Command/Air Force Logistics Command (AFSC/AFLC) consolidation to Air Force Material Command (AFMC). LRIP 2 and 3 contract awards were realigned to ensure that there would be no production break. The ADM dated 26 Mar 92 directed a four year LRIP program vice the three year LRIP program as originally planned. This resulted in a Milestone III DAB change from Dec 94 to Dec 95. As a result of the DAB Program Review, the IOC date was more refined. Lot 2 contract award date

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9b. (U) Schedule (Cont'd):

a negotiated LRIP 1 contract prior to the CSC Review on 19 Dec 91 and the impact of the FY93 PB. Program Management Responsibility Transfer (PMRT) was eliminated as a milestone because it was no longer applicable following Air Force Systems Command/Air Force Logistics Command (AFSC/AFLC) consolidation to Air Force Materiel Command (AFMC). LRIP 2 and 3 contract awards were realigned to ensure that there would be no production break. The ADM dated 26 Mar 92 directed a four year LRIP program vice the three year LRIP program as originally planned. This resulted in a Milestone III DAB change from Dec 94 to Dec 95. As a result of the DAB Program Review, the IOC date was more refined. Lot 2 contract award date was changed from Apr 93 to Jan 93 due to modification to the LRIP 1 contract versus negotiating a separate contract. Lot 1 Initial Production First Delivery was added as an approved Acquisition Program Baseline (APB) milestone. Lot 4 contract award slipped 2 weeks from 31 Dec 94 to 11 Jan 95. The effective start date was 30 Dec 94.

c. (U) Current Change Explanations --

(Ch-1) Milestone III decision slipped from Dec 95 to May 96, due to asset non-availability resulting from the LAT failure. This will allow the Director of Operational Test and Evaluation (DOT&E) sufficient time to complete the Beyond Low Rate Initial Production Report.

d. (U) References --

(U) Development Estimate:

OSD/CAIG Briefing, May 86. (Approved by OSD).

(U) Approved Program:

DAB Approved Acquisition Program Baseline dated October 04, 1993.

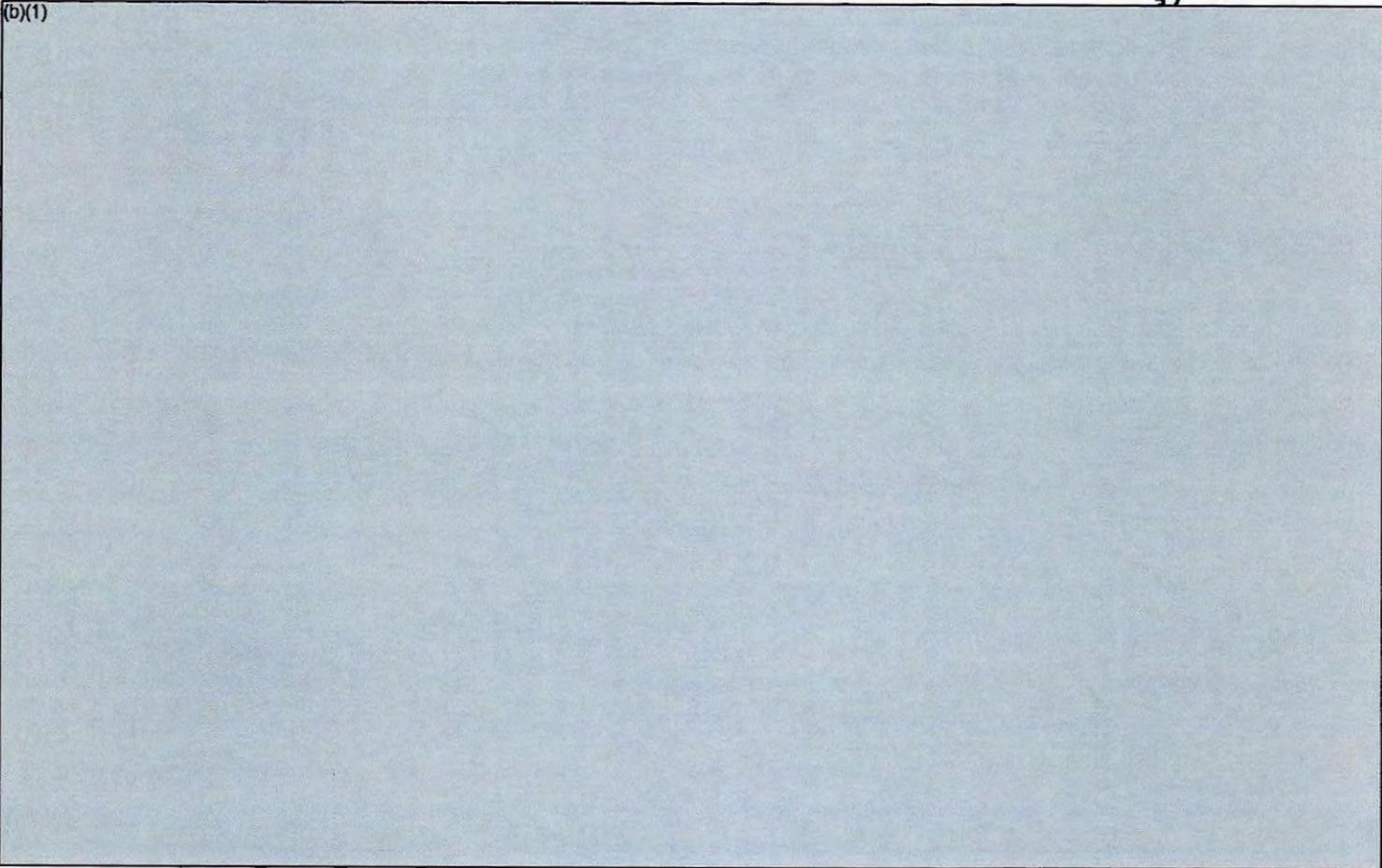
10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Altitude FT AGL	200	200	/ 200	228	200
Altitude FT MSL	20000	20000	/ 20000	18700	20000
Attitude (degrees)	+45 to -45	+45 to -45	/ +45 to -45	+15 to -45	+45 to -45 (Compat- ible w/ AC Env)
Airspeed (KCAS)	200 to 650	250 to 700	/ 250 to 650	250 to 648	200 to 650 (Up to Mach 1.4)
Acceleration (Gs)	-.5 to +5	+0.5 to + 5	/ +0.5 to +5	+ .5 to +4	+ .5 to +5
Targets	4/	N/A	/ N/A	See Footnote	See Footnote 2/

(b)(1)

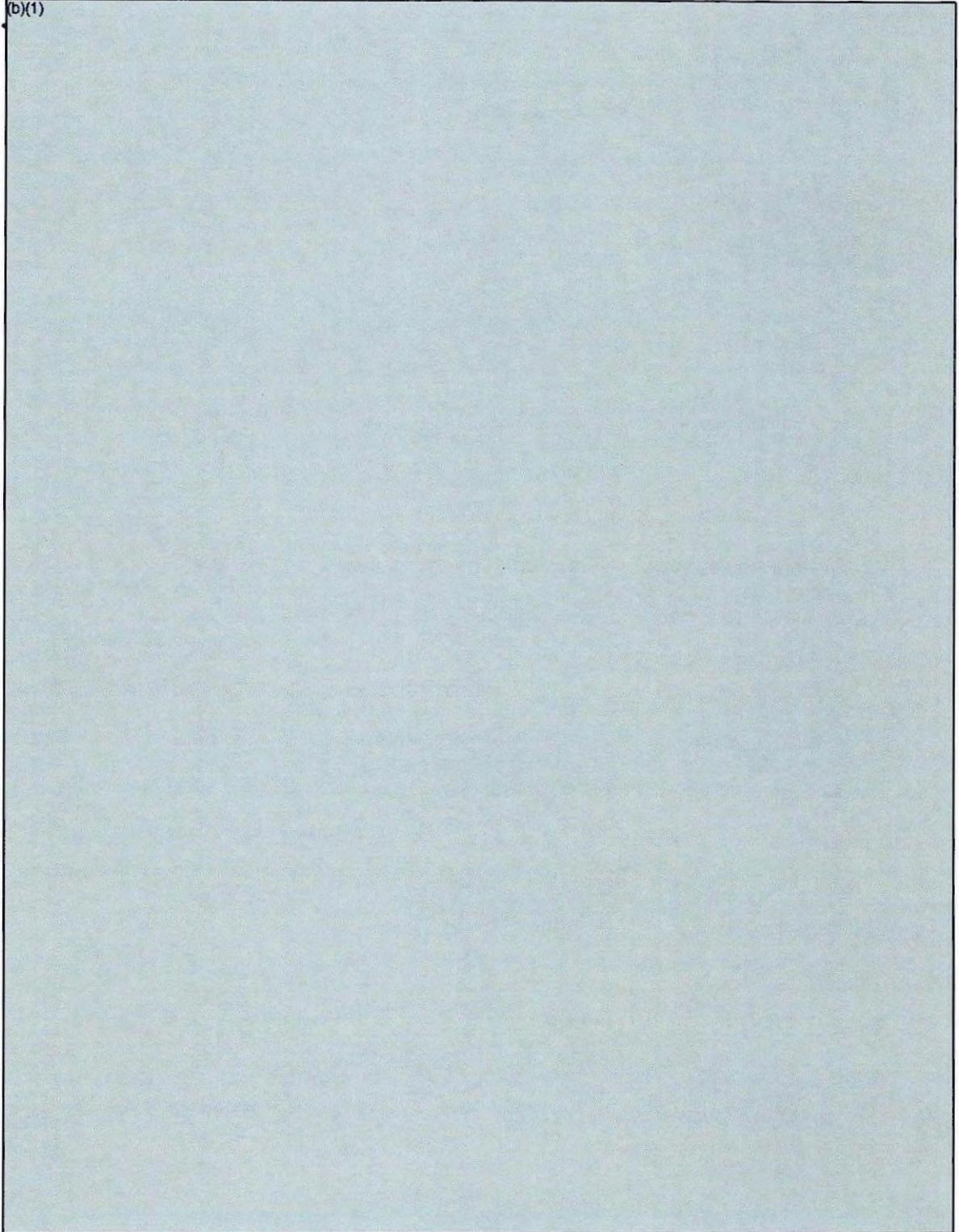


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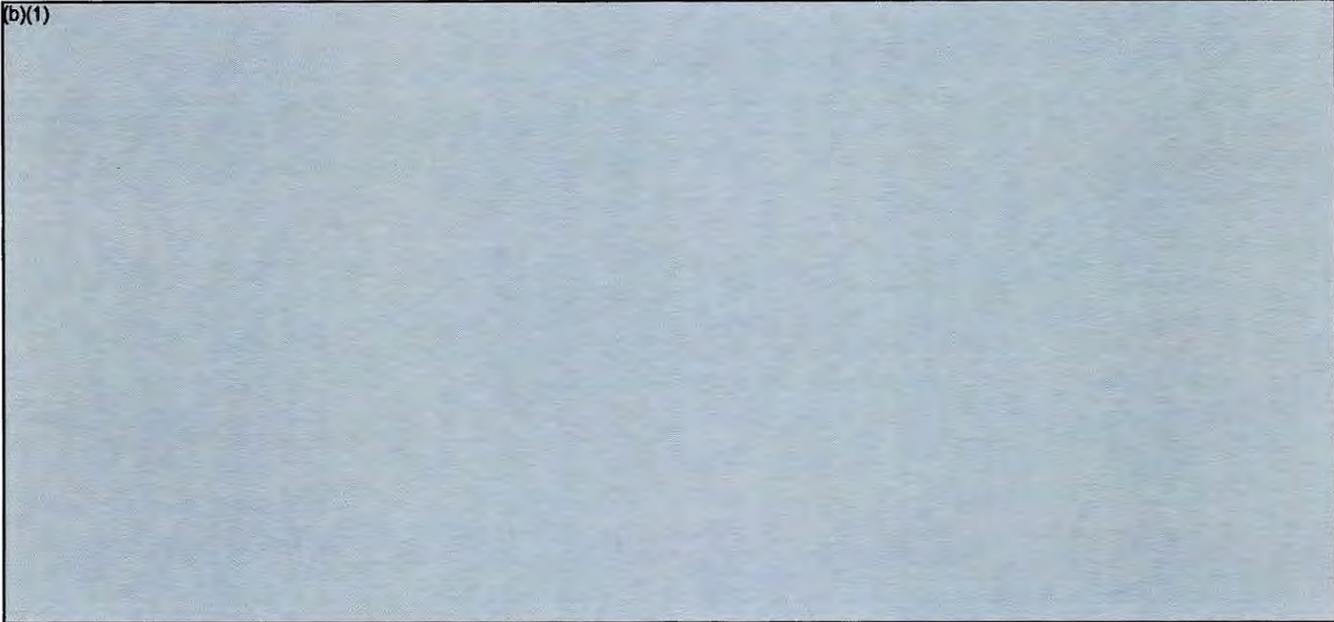
10a

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(b)(1)



b. (U) Previous Change Explanations --

Airspeed was changed to 200-650 KCAS (threshold) and 200-700 KCAS (goal) per the 11 May 89 SORD. Aircraft compatibility was changed by deleting the F-4 and adding suffix designators for the A-7, F-15, F-16, and F-111. The A-7 and B-52 aircraft requirements were deleted per HQ Air Combat Command (ACC) Msg 131313Z Nov 89 and HQ SAC Msg 291356Z Dec 89. The USMC/USN aircraft elements were added per the 11 May 89 SORD. The System Reliability threshold has changed from 0.90 to 0.94 per ACC message and has been included in the SORD. Corrected administrative errors and corrected the expanded Current Estimate description erroneously left out of the Dec 91 SAR. Aircraft Compatibility was changed to add bomber aircraft. Lethality - Kills-Per-Pass (Countermeasured Environment) was added as an approved APB Performance Characteristic.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

OSD/CAIG Briefing, May 86. (Approved by OSD).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 04, 1993.

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11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	80.0	135.0	140.3
Procurement	1139.8	654.9	698.2
Flyaway	(1127.7)		(697.1)
Other Weapon Systems	(12.1)		(1.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 79 Base-Year \$	1219.8	789.9	838.5
 Escalation	 1186.0	 937.8	 1109.1
Development (RDT&E)	(47.7)	(91.1)	(96.8)
Procurement	(1138.3)	(846.7)	(1012.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2405.8	1727.7	1947.6

Procurement funding does not include SEEK EAGLE funding of \$10.8M.

b. (U) Quantity --			
Development (RDT&E)	75	75	75
Procurement	<u>14000</u>	<u>5000</u>	<u>5000</u>
Total	14075	5075	5075

Note: Excludes 80 RDTE prototypes from the SAR Baseline and 80 from the Current Estimate that are not considered fully configured.

SFW was approved to enter LRIP in March 92 by the Office of the Secretary of Defense. LRIP quantities approved at Milestone II were 521 (LRIP 1 - 98 units, LRIP 2 - 23 units, LRIP 3 - 175 units, LRIP 4 - 225 units). LRIP quantities were reduced to 492 due to budget constraints (LRIP 1 - 98, LRIP 2 - 22, LRIP 3 - 112, LRIP 4 - 260).

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
OSD/CAIG Briefing, May 86. (Approved by OSD).

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11a. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated October 04, 1993.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (OCT 93 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY79\$)	838.5	789.9	
(2) Quantity	5075	5075	
(3) Unit Cost	0.165	0.156	6.15
b. (U) Procurement			
(1) Cost (BY79\$)	698.2	654.9	
(2) Quantity	5000	5000	
(3) Unit Cost	0.140	0.131	6.61

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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	127.7	2278.1	0.0	2405.8
Previous Changes:				
Economic	-1.0	+150.9	-	+149.9
Quantity	+5.9	-1425.0	-	-1419.1
Schedule	-	+925.4	-	+925.4
Engineering	-	-	-	-
Estimating	+95.1	-312.0	-	-216.9
Other	-	-	-	-
Support	-	-18.0	-	-18.0
Subtotal	+100.0	-678.7	-	-578.7
Current Changes:				
Economic	0.2	-85.4	-	-85.2
Quantity	-	-	-	-
Schedule	-	218.6	-	+218.6
Engineering	-	-	-	-
Estimating	9.2	-16.4	-	-7.2
Other	-	-	-	-
Support	-	-5.7	-	-5.7
Subtotal	+9.4	+111.1	-	+120.5
Total Changes	+109.4	-567.6	-	-458.2
Current Estimate	237.1	1710.5	-	1947.6

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1979 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	80.0	1139.8	0.0	1219.8
Previous Changes:				
Quantity	+3.6	-450.3	-	-446.7
Schedule	-	+92.4	-	+92.4
Engineering	-	-	-	-
Estimating	+52.2	-141.6	-	-89.4
Other	-	-	-	-
Support	-	-8.6	-	-8.6
Subtotal	+55.8	-508.1	-	-452.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	65.4	-	+65.4
Engineering	-	-	-	-
Estimating	4.5	3.5	-	+8.0
Other	-	-	-	-
Support	-	-2.4	-	-2.4
Subtotal	+4.5	+66.5	-	+71.0
Total Changes	+60.3	-441.6	-	-381.3
Current Estimate	140.3	698.2	-	838.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Quantity: Increased RDT&E units by five for Life Cycle Surveillance Testing and eight units for IOT&E.

Estimating: Offset to quantity increase - reduced management flexibility in executing program; adjusted for current and prior year escalation; funds added in FY87 Appropriations Bill to accelerate SFW program development; adjusted for Air Force assessments - reduced scope of effort to accelerate SFW development; increased funds for SEEK EAGLE test requirements; increased funds for Pre-Production Process Verification, additional testing and SPO

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13b. (U) Cost Variance Analysis (Cont'd):

support requirements; increased RDT&E funds for Multi-Staged Improvement Program (MSIP); increased funds to support ACC in accomplishing the Cost & Operational Effectiveness Assessment (COEA); adjusted for program assessment (ANSER) and Air Staff Budget Authority; funds removed in order to support Desert Storm; increased for negotiated Request for Equitable Adjustments (RFEA); adjusted to equal actual expended dollars; funds moved from RDT&E to Procurement appropriation to pay for acquisition support contractors in FY96-02.

Procurement

- Economic:** Revised escalation indices; economic adjustment for negative program change.
- Quantity:** Increased flyaway costs to procure 5,803 additional SFWs in accordance with the revised PMD to incorporate latest assessment of Air Force quantity requirements; total quantities reduced from 19,803 to 16,726; procurement objective reduced from 16,726 to 10,000 weapons; quantity reduced from 10,000 to 5,000 weapons.
- Schedule:** Impact of revised schedule in accordance with the revised PMD to incorporate latest assessment reflected in FY88-92 Non-nuclear Consumables Annual Analysis (NCAA); first procurement buys scheduled for FY89 changed to FY91; production schedule increased by one year; rephased procurement buy schedule; corrected variance categorization in Dec 89 SAR; production extended two years to reach quantity of 10,000 under current budget constraints; PEP program reduced unit cost allowing increased annual quantities within the current PB; schedule changes associated with decreased quantity; procurement buy schedule changed due to slower ramp up quantity; change in annual procurement buy profile which increased ramp quantities and deleted three years of procurement; reduced annual quantities and added two years of procurement.
- Estimating:** New pricing methodology used Risk Reduction hardware actuals; competition started two years earlier; costs savings resulted from a revised Alternate Source Strategy; estimating change associated with reduction in quantities from 19,803 to 16,726 since SAR baseline; corrected variance categorization in Dec 89 SAR; current acquisition strategy and the incorporation of production

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13b. (U) Cost Variance Analysis (Cont'd):

transition reflected a net savings; cost estimate updated to reflect: acquisition strategy change and incorporation of negotiated LRIP 1 contract; PEP reduced current flyaway costs; adjusted for current and prior inflation; LRIP 1 incorporation increased subcontract actual cost; inclusion of actuals from LRIP's 1, 2, and 3 and their impact on outyear procurement; incorporated impact of lower production rate on outyear costs; addition of funds needed for Producibility Enhancement Program.

Support: Increased data costs associated with 5,803 SFWs added to the program; price adjusted based on actuals; decreased data cost associated with the reduced quantities; decreased data costs associated with reduced hardware costs; adjusted for current and prior inflation; decreased data costs associated with three years less procurement; increase in data costs associated with two additional years of procurement.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.2
FY96 funds (\$9.6M) added for the SFW P3I program; FY95 funds (\$.2M) decreased to reflect actual dollars released. (Estimating)	+4.6	+9.4
	-----	-----
RDT&E Subtotal	+4.5	+9.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-85.2
Economic adjustment for negative program change. (Economic)	N/A	-0.2
Annual procurement buys reduced and program stretched by two years. (Schedule)	+65.4	+218.6
Adjustment for Current and Prior Inflation. (Estimating)	+4.3	+10.0

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Cost estimate updated to reflect incorporation of LRIP 1/2 cost underrun and LRIP 3/4 negotiated costs and effect on out-year procurement. (Estimating)	-1.8	-28.4
Adjustment for Current and Prior Inflation. (Estimating)	+1.0	+2.0
Adjustment for Current and Prior Inflation. (Support)	--	+0.1
Other weapon system costs reduced due to less data requirements for firm-fixed price contracts. (Support)	-2.4	-5.8
Procurement Subtotal	<u>+66.5</u>	<u>+111.1</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.171	0.013	0.024	0.225	--	-0.044	--	-0.005	0.213	0.384

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --			Initial Contract Price		
(U) <u>LRIP 1 and 2:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Textron Defense Systems, Wilmington, MA			\$101.5	\$113.8	98
F08626-92-C-0002, FPIF/FPP/CPAF/TM					
Award: March 31, 1992					
Definitized: March 31, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$135.0	\$150.2	120	\$131.3	\$131.3	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$4.4	\$-1.5	
Cumulative Variances To Date (09/30/95)			\$1.7	\$-1.0	
Net Change			\$-0.7	\$0.5	

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15. (U) Contract Information (Cont'd):

Explanation of Change:

The changes in Current Contract Target and Ceiling Price are due to the addition of JSOW BLU-108 requirements. Changes in Estimated Price At Completion for Contractor and Program Manager are due to contractor underrun.

The favorable Cost Variance decreased due to additional requirements for the TMD due to LAT 6 failure. A favorable \$5.2M variance is forecasted at completion.

The unfavorable Schedule Variance decreased due to the resolution of the LAT failure and delivery of Lot 6.

NOTE: The FPIF portion of the LRIP contract is for the 120 weapons, the FFP is for data and warranty, the CPAF is for the PEP Phase 1 and Phase 2 (Subphase 1) efforts, and the time and materials (T&M) is for the Environmental Protection Program. Contract costs include funding for the JSOW and SEEK EAGLE programs.

Since this contract is over 90 percent complete, this is the final time this contract will be reported in the SAR.

(U) LRIP 3: Textron Defense Systems, Wilmington, MA F08626-94-C-0006, FPIF/FFP Award: December 30, 1993 Definitized: December 30, 1993	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$70.9	\$79.5	112

Current Contract Price	Estimated Price At Completion			
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>
\$82.7	\$91.6	112	\$82.7	\$82.7
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$0.6	\$0.0
Cumulative Variances To Date (12/31/95)			\$5.1	\$-4.6
Net Change			\$5.5	\$-4.6

Explanation of Change:

The changes to Current Target, Ceiling Price, and Estimated Price at Completion for both Contractor and Program Manager increased due to addition of SEEK EAGLE units, second source battery qualification, TMD industrial base study, OT&E test support, and PEP 2 cost growth.

The favorable Cost Variance increased primarily due to the diversion

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15. (U) Contract Information (Cont'd):
of level of effort manpower to LRIP 2 failure analyses due to the LAT 6 failure.

The unfavorable Schedule Variance increased due to the delay in completion of tactical units at the Load, Assembly, and Packing (LAP) Facility because of diversion of manpower to help facilitate LRIP 2 failure analyses and corrective action activities.

(U) <u>LRIP 4:</u>			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Textron Defense Systems, Wilmington, MA					
F08626-94-C-0006, FPIF/FFP			\$106.4	\$119.3	260
Award: January 11, 1995					
Definitized: December 30, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$111.4	\$125.0	260	\$111.4	\$111.4	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			N/A	N/A	
Cumulative Variances To Date (12/31/95)			\$1.5	\$1.9	
Net Change			\$1.5	\$1.9	

Explanation of Change:

The changes to current target, ceiling price, and estimated price at completion for both Contractor and Program Manager is due to addition of SEEK EAGLE units, cold temperature testing, and JSOW test hardware.

The favorable Cost Variance is due to production integration and floor team support efforts that are lagging due to LRIP 1/2 rework and LRIP 3 recovery activities. The scaling back of the production rate review as well as fewer requirements than planned should result in a favorable variance at completion.

The favorable Schedule Variance is due primarily to early receipt of proximity fuses from the vendor, early receipt of shipping containers, early receipt of materials and an early start of projectile production.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 63.6% (14 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 37.4% (\$728.1 / \$1947.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY83-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2004)	Total
RDT&E	227.5	9.6	-	-	237.1
Procurement	330.2	160.8	131.1	1088.4	1710.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	557.7	170.4	131.1	1088.4	1947.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: RDT&E - All Sources

1983				2.9	4.2	4.2	4.2	4.9
1984				11.2	16.7	16.7	16.7	3.9
1985				23.1	35.4	35.4	35.4	3.4
1986				15.6	24.6	24.6	24.6	2.8
1987				14.1	23.1	23.1	23.1	2.7
1988				17.0	28.7	28.7	28.7	3.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: RDT&E - All Sources (Cont'd)

1989				19.2	33.9	33.9	33.9	4.2
1990				14.9	27.1	27.1	27.1	4.0
1991				12.0	22.7	22.7	22.4	4.3
1992				5.0	9.7	9.7	9.5	2.8
1993								2.7
1994								2.0
1995				0.7	1.4	1.4	0.8	1.9
1996				4.6	9.6			2.0
1997								
1998								
1999								
2000								
2001								
2002								
Subtot	75			140.3	237.1	227.5	226.4	

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: Procurement - All Sources

1992	98	15.6	40.7	56.6	112.9	112.7	110.4	2.8
1993	22	1.0	7.7	8.7	17.7	17.7	17.5	2.7
1994	112	11.0	32.8	44.0	91.1	90.9	51.4	2.0
1995	260	4.1	43.3	47.5	108.5	104.6	13.8	1.9
1996	500	4.6	64.2	68.9	160.8	1.0		2.0
1997	400	3.0	51.9	54.9	131.1			2.2
1998	466	1.6	55.8	57.5	140.2			2.3
1999	500	1.6	58.5	60.2	150.1			2.2
2000	500	1.7	55.9	57.6	146.8			2.2
2001	500	1.7	55.8	57.6	149.9			2.2
2002	610	2.3	65.4	67.7	180.2			2.2
2003	600	1.9	64.5	66.5	180.9			2.2
2004	432	1.7	48.8	50.5	140.3			2.2
Subtot	5000	51.8	645.3	698.2	1710.5	326.9	193.1	

Appropriation: MILCON - All Sources - None.

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: O&M - All Sources - None.

Total	5075	51.8	645.3	838.5	1947.6	554.4	419.5	
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Appropriation: 3600 Research, Development, Test + Eval, AF

1983				2.9	4.2	4.2	4.2	4.9
1984				11.2	16.7	16.7	16.7	3.9
1985				23.1	35.4	35.4	35.4	3.4
1986				15.6	24.6	24.6	24.6	2.8
1987				14.1	23.1	23.1	23.1	2.7
1988				17.0	28.7	28.7	28.7	3.0
1989				19.2	33.9	33.9	33.9	4.2
1990				14.9	27.1	27.1	27.1	4.0
1991				12.0	22.7	22.7	22.4	4.3
1992				5.0	9.7	9.7	9.5	2.8
1993								2.7
1994								2.0
1995				0.7	1.4	1.4	0.8	1.9
1996				4.6	9.6			2.0
1997								

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1998								
1999								
2000								
2001								
2002								
Subtot	75			140.3	237.1	227.5	226.4	

Appropriation: 3020 Missile Procurement, Air Force

1995	260	4.1	43.3	47.5	108.5	104.6	13.8	1.9
1996	500	4.6	64.2	68.9	160.8	1.0		2.0
1997	400	3.0	51.9	54.9	131.1			2.2
1998	466	1.6	55.8	57.5	140.2			2.3
1999	500	1.6	58.5	60.2	150.1			2.2
2000	500	1.7	55.9	57.6	146.8			2.2
2001	500	1.7	55.8	57.6	149.9			2.2
2002	610	2.3	65.4	67.7	180.2			2.2
2003	600	1.9	64.5	66.5	180.9			2.2
2004	432	1.7	48.8	50.5	140.3			2.2

Sensor Fuzed Weapon, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY79 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

Subtot	4768	24.2	564.1	588.9	1480.8	105.6	13.8	
--------	------	------	-------	-------	--------	-------	------	--

FY95 and FY96 funds have a separate appropriation (3011, Procurement of Ammunition, AF). However, SAR software does not include this new Appropriation, therefore FY95-03 Procurement was left in the Appropriation 3020 (Missile Procurement, AF) in order to make valid comparisons with the Dec 94 SAR.

Appropriation: 3080 Other Procurement, Air Force

1992	98	15.6	40.7	56.6	112.9	112.7	110.4	2.8
1993	22	1.0	7.7	8.7	17.7	17.7	17.5	2.7
1994	112	11.0	32.8	44.0	91.1	90.9	51.4	2.0
Subtot	232	27.6	81.2	109.3	221.7	221.3	179.3	
Grand Total	5075	51.8	645.3	838.5	1947.6	554.4	419.5	

Procurement funding does not include SEEK EAGLE funding of \$10.8M. (\$2.0M - FY94, \$4.2M - FY95, \$4.6M - FY96)

Obligations and expenditures reflect program office records as of 28 Feb 96.

Sensor Fuzed Weapon, December 31, 1995

17. (U) Production Rate Data:

a. (U) Deliveries to Date --		<u>Plan/Actual</u>
	EDT&E	155/155
	Procurement	203/133

b. (U) Approved Design-to-Cost Objective -- N/A.

- There was no formal DTC objective established for SFW.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The SFW is a no maintenance/wooden round weapon. As such, it will require: no scheduled maintenance; limited unscheduled repairs and stockpile sampling; no shop or operational checkout, testing or test equipment; preload checks and tasks limited to quick visual checks. Field level maintenance activities will be restricted to unscheduled, exterior, on-equipment activities - i.e. corrosion control, desiccant change in the storage container, and lug and lanyard replacement. No special training, support equipment, or personnel are required to maintain the SFW system. The SFW will be compatible with existing munitions handling/loading equipment. All support equipment needed to support the SFW is already in the inventory.

The elements that account for the Operating and Support (O&S) costs are warranty testing (\$83.00), disposal costs (\$20.00), manpower (\$12.00) and second destination transportation (\$4.00). Distributing those costs over five thousand weapons with a ten year shelf life yields a cost of approximately \$119.00 (BY79\$) per weapon per year. The latest cost estimate for the O&S costs is dated 9 Nov 95.

Sensor Fuzed Weapon, December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1979 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per SFW	Avg Annual Cost Per NO ANTECEDENT
MILPERS	0.0	N/A
WARRANTY TESTING	0.1	N/A
2nd DEST TRANS	0.0	N/A
DISPOSAL	0.0	N/A
Total	0.1	N/A

c. (U) Contractor Support Costs -- None.

There is no antecedent system. There are no contractor support costs for this weapon.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: E-2C AEW (HAWKEYE)

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
E-2C/Carrier Based Airborne Early Warning Command and Control System
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
E-2 AND ATDS PROGRAM OFFICE CAPT PETER A. SHEPARD
PROGRAM EXECUTIVE OFFICER Assigned: January 31, 1992
TACTICAL AIRCRAFT PROGRAMS (PMA-231) AV 664-2282 x4370
WASHINGTON, DC 20361-1231 COMM (703) 604-2282 x4370
4. (U) Program Elements/Procurement Line Items:
RDT&E:
PE 0204152N Project E0463
PROCUREMENT:
APPN 1506 ICN 0195 (Navy)
MILCON:
PE 0204611N

~~Derived from: IS O&A-35 of ORIGINATOR 83313-13~~
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96-C-0412

E-2C AEW (HAWKEYE), December 31, 1995

5. (U) Related Programs:

G-2A Grayhound; Improved Engine (PE0604252N)

6. (U) Mission and Description:

The Grumman built E-2C "Hawkeye" is a twin-engine, carrier-based, Combat-Information-Center aircraft which extends task force defense perimeters by providing early warning of approaching enemy air and surface units and vectoring interceptors and strike aircraft to the attack. Carrying a crew of five, the E-2C also provides area surveillance, intercept, search and rescue, communication relay, and strike/air traffic control. Principal subsystems include AN/AP-125/138/139/145 radar and ALR-73 Passive Detection Systems which allow the E-2C to detect emitters/targets well beyond radar range.

In order to take advantage of improved sensor and communication capabilities resulting from the Update Development Program (UDP II), to exploit emerging Commercial Off-The-Shelf technologies, and to address supportability issues with the current mission computer, plans and funds exist to replace the E-2C weapon system's antiquated tactical computer (which predates the E-2C aircraft). The replacement computer's hardware and software will be integrated into the onboard subsystems encompassing complex sensor inputs and outputs.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The E-2C was introduced to the fleet in 1973. The automatic overland radar target tracking and Electronic Counter Counter-Measure (ECCM) features were introduced to the fleet in 1977 with the new AN/AP-125 Radar Advanced Radar Processing Systems (ARPS). The designation of the AN/AP-125 radar was changed to the AN/AP-138 in 1983 with the production incorporation and delivery of the Total Radiation Aperture Control Antenna (TRAC-A) and other radar changes. The AN/AP-139, delivered to the fleet in December 1988, improved radar ECCM performance and increased system track capacity. The first limited production AN/AP-145 aircraft was accepted in November 1990.

Update Development Program (UDP) Group II AN/AP-145 completed OT-IIC operational testing in November 1990. The AN/AP-145 increases the maximum radar range, improves the identification friend or foe system, automates radar system optimization and improves radar tracking. The UDP and T56-A-427 Engine Upgrade reached OPEVAL concurrently in FY-92. The E-2C satisfies the mission needs.

The E-2C reached 90% completion on December 20, 1991 and submitted its last SAR. The approved E-2C new production began with advance procurement in FY 94. The procurement of 36 aircraft started with four aircraft being procured in FY 95, the last aircraft will be

E-2C AEW (HAWKEYE), December 31, 1995

7a. (U) Program Highlights (Cont'd):

procured in FY 03.

The current Litton L-304 Computer Processor (CP) in the E-2C is based on 1960's vintage technology. As E-2C sensors and communications systems have become increasingly sophisticated and complex, the L-304 has become saturated in terms of available memory and processing power and is unable to support the full range of sensor and communication systems computing requirements. While some piecemeal improvements have been attempted, they are still inadequate to support computer performance requirements, and the technology of the basic CP is rapidly becoming unsupportable. Continuing advances in computing technology, primarily driven by advances in commercial initiatives, allow orders of magnitude increase in computing capacity at dramatically reduced space and weight. These space and weight reductions are required to enable required upgrades including cooperative engagement capability and satellite communications. Significant growth capacity and life cycle cost savings can be realized by leveraging commercial technology advancements using an "open architecture" design philosophy with Commercial Off the Shelf components.

Studies initiated in the late 1980's confirmed the need for an upgrade to the current E-2C computer and possible upgrade approaches. Funding was identified and a Mission Computer Upgrade (MCU) Milestone IV/II was approved by ASN(RDA) September 94, with an Engineering and Manufacturing Development (EMD) contract for MCU development and integration signed with Grumman Aerospace Corporation November 94. Low rate initial production is scheduled for FY 97 and FY 98, and final system testing is planned for FY 99. Full rate production and Initial Operational Capability is planned for FY 00.

b. (U) Significant Developments Since Last Report --
None

This system will satisfy mission requirements.

c. (U) Changes Since As Of Data --
The two (2) FMS aircraft budgeted in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. Without FMS sales in FY 00 the unit cost of our aircraft purchases will increase approximately 8%.

The last E-2C aircraft will be procured in FY 04.

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E-2C AEW (HAWKEYE), December 31, 1995

8. (U) Threshold Breaches:

There are currently no breaches to the Approved Acquisition Program Baseline dated 27 Oct 1994. There are no Nunn McCurdy unit cost breaches.

9. (U) Schedule:

E-2C Aircraft

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
IOC	APR 92	APR 92	APR 92
Milestone III	JUN 94	JUN 94	OCT 94
FRP Contract Award	JUN 94	JUN 94	DEC 94
FOC	OCT 94	OCT 94	OCT 94
FOT&E	JUN 97	JUN 97	JUN 97
Organic Support Capability Date	JUN 98	JUN 98	JUN 98
Service Depot Support Date	JUN 99	JUN 99	JUN 99

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

Mission Computer Upgrade

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	SEP 94	SEP 94	SEP 94
Development Contract Award	SEP 94	SEP 94	NOV 94
Preliminary Design Review Complete	MAR 95	MAR 95	AUG 95(Ch-1)
Critical Design Review Complete	SEP 95	SEP 95	FEB 96(Ch-2)
Qualification Testing	FEB 96	FEB 96	MAR 96(Ch-3)
First Flight of Developmental Test Aircraft	SEP 96	SEP 96	JAN 97(Ch-3)

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E-2C AEW (HAWKEYE), December 31, 1995

9a. (U) Schedule (Cont'd):
Mission Computer Upgrade

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Navy Program Review - LRIP I	MAR 97	MAR 97	JUL 97(Ch-3)
Low-Rate Initial Production I Contract Award	MAR 97	MAR 97	JUL 97(Ch-3)
Navy Program Review - LRIP II	MAR 98	MAR 98	MAR 98
Low-Rate Initial Production Contract Award	MAR 98	MAR 98	MAR 98
Low-Rate Initial production, First Delivery	MAR 98	MAR 98	MAR 98
First Flight of Production Representative Aircraft	SEP 98	SEP 98	SEP 98
Navy Final DT&E (Complete)	MAY 99	MAY 99	MAY 99
Initial Operational Capability	JUN 99	JUN 99	JUN 99
Navy IOT&E Complete	DEC 99	DEC 99	SEP 99(Ch-3)
Milestone III	NOV 99	NOV 99	NOV 99
Full Rate Production Contract Award	MAR 00	MAR 00	MAR 00
Organic Support Capability, Non-developmental Items	AUG 00	AUG 00	AUG 00
First Aircraft Equipped with FRP Unit	SEP 01	SEP 01	SEP 01
Organic Support Capability, Developmental Items	JAN 03	JAN 03	JAN 03
Service Depot Support, Developmental Item	JAN 03	JAN 03	JAN 03

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

CH-1 PDR complete Aug 95. Contract baseline establishment of Apr 95
CH-2 CDR complete Feb 96. Apr 95 contract baseline establishment
CH-3 Program realignment during post award. Apr 95 contract baseline
establishment

d. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted to enter into the Engineering and Manufacturing Development phase for the Mission Computer Upgrade along with five low rate initial production units in FY 97 and three units in FY 98.

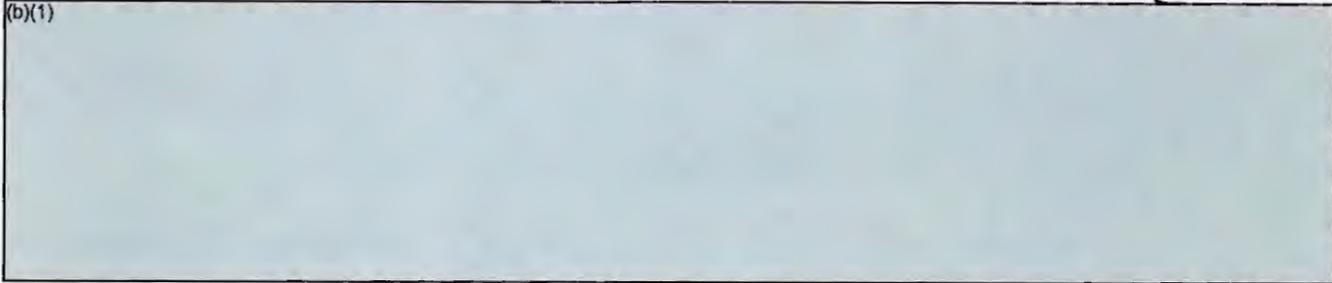
(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

E-2C AEW (HAWKEYE), December 31, 1995

10. (U) Performance Characteristics:
E-2C Aircraft

a. (U) Performance --	PdE	Approved Program		Demonstrated Perf	Current Estimate
		Objective/Threshold			
Take off weight	55000	55000	/ 55000	55000	55000
Length	57'6"	57'6"	/ 57'6"	57'6"	57'6"
Span	80'7"	80'7"	/ 80'7"	80'7"	80'7"
Engine					
Number	2	2	/ 2	2	2
Type	T56-A-427	T56-A-427	/ T56-A-427	T56-A-427	T56-A-427
Crew	5	5	/ 5	5	5
Speed (KIAS)					
Max Speed @13,500 ft (KIAS)	315	315	/ 315	N/A	315
Cruise Speed @ 24,540 ft.	270	270	/ 270	N/A	270
Time on Station @200 nm (hrs)	4.0	4.0	/ 4.0	N/A	4.0
Service Ceiling (ft)	28100	28100	/ 28100	N/A	28100
Passive Detection					



(b)(1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

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.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

E-2C AEW (HAWKEYE), December 31, 1995

10d. (U) Performance Characteristics (Cont'd):
Mission Computer Upgrade

a. (U) Performance --	DE	Approved Program		Demonstrated Perf	Current Estimate
		Objective	Threshold		
System Weight (lbs)	150	150	/ 300	TBD	150
Load Time (seconds)	45	45	/ 270	TBD	45
In-Flight Reload (seconds)	20	20	/ 144	TBD	20
Operational Availability	0.97	0.97	/ 0.93	TBD	0.97

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted for entry into the Engineering and Manufacturing Development phase as well as five low rate initial production units in FY 97 and three units in FY 98.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):
E-2C Aircraft

a. (U) Cost --	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	0.0	0.0	0.0
Procurement	2422.0	2422.0	2456.7
Airframe & Changes	(1914.2)		(1957.6)
Engine & Accessories	(206.2)		(193.0)
Electronics	(87.5)		(87.5)
Armament & Other GPE	(5.6)		(7.2)
Total Flyaway	(2213.5)		(2245.3)
Other Weapon Systems	(141.1)		(147.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(67.4)		(64.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 94 Base-Year \$	2422.0	2422.0	2456.7

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E-2C AEW (HAWKEYE), December 31, 1995

11a. (U) Total Program Cost and Quantity (Cont'd):
E-2C Aircraft

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	542.0	542.0	422.5
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(542.0)	(542.0)	(422.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	2964.0	2964.0	2879.2

The two (2) FMS aircraft budgeted in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. Without FMS sales in FY 00 the unit cost of our aircraft purchases will increase approximately 8%.

b. (U) Quantity --

Development (RDT&E)		0	0
Procurement	36	36	36
Total	36	36	36

c. (U) Foreign Military Sales/International Cooperative Programs --
FMS

Sales to date are 4 for Israel for a total of \$178.8M, 13 for Japan for a total of \$893.6M, 6 for Egypt for a total of \$896.2M, 4 for Singapore for a total of \$318.3M, and 2 for France for a total of \$561.7M. FMS sales to Taiwan total \$198.0M in support of 4 direct commercial sale (DCS) aircraft.

International Cooperative Program

	FY 92	FY 93 in millions)	FY 94	Total
SD FYDF (Numm) PE 0603790D	.225	.350	.800	1.375
EGYPT	2.880	2.880		5.760
Total	3.105	3.230	.800	7.135

d. (U) Nuclear Costs -- None

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E-2C AEW (HAWKEYE), December 31, 1995

11e. (U) Total Program Cost and Quantity (Cont'd):
E-2C Aircraft

e. (U) References --

(U) Production Estimate:

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.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

Mission Computer Upgrade

a. (U) Cost --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	205.7	205.7	235.7
Procurement	196.5	196.5	160.2
Airframe & Changes	(196.5)		(91.4)
Non-Recurring			(10.6)
Total Flyaway	(196.5)		(102.0)
Mod Spares			(10.1)
ICS Rework, Support, Other			(27.3)
Installation			(10.4)
Total Other Wpn Sys	(0.0)		(47.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(10.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 94 Base-Year \$	402.2	402.2	395.9
 Escalation	 81.7	 81.7	 56.0
Development (RDT&E)	(18.2)	(18.2)	(15.9)
Procurement	(63.5)	(63.5)	(40.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	483.9	483.9	451.9
 b. (U) Quantity --			
Development (RDT&E)	3	3	3
Procurement	74	74	74
Total	77	77	77

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 11 from the Current Estimate that are not considered fully configured.

E-2C AEW (HAWKEYE), December 31, 1995

11c. (U) Total Program Cost and Quantity (Cont'd):
Mission Computer Upgrade

- c. (U) Foreign Military Sales/International Cooperative Programs -- None.
- d. (U) Nuclear Costs -- None.
- e. (U) References --

(U) Development Estimate:

The Acquisition Decision Memorandum for E-2C Mission Computer Upgrade Milestone IV/II was approved 27 October 1994 by ASN RD&A. Approval was granted for entry into the Engineering and Manufacturing Development phase as well as five low rate initial production units in FY 97 and three units in FY 98.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated October 27, 1994.

12. (U) Unit Cost Summary:

E-2C Aircraft

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (OCT 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY94\$)	2456.7	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	68.242	67.278	1.43
b. (U) Procurement			
(1) Cost (BY94\$)	2456.7	2422.0	
(2) Quantity	36	36	
(3) Unit Cost	68.242	67.278	1.43

The two (2) FMS aircraft budgeted in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. Without FMS sales in FY 00 the unit cost of our aircraft purchases will increase approximately 8%.

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E-2C AEW (HAWKEYE), December 31, 1995

12. (U) Unit Cost Summary (Cont'd):

Mission Computer Upgrade

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY94\$)	395.9	402.2	
(2) Quantity	77	77	
(3) Unit Cost	5.142	5.223	-1.57
b. (U) Procurement			
(1) Cost (BY94\$)	160.2	196.5	
(2) Quantity	74	74	
(3) Unit Cost	2.165	2.655	-18.47

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E-2C AEW (HAWKEYE), December 31, 1995

13. (U) Cost Variance Analysis:
E-2C Aircraft

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2964.0	0.0	2964.0
Previous Changes:				
Economic	-	-7.0	-	-7.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-32.5	-	-32.5
Other	-	-	-	-
Support	-	+10.9	-	+10.9
Subtotal	-	-28.6	-	-28.6
Current Changes:				
Economic	-	-157.8	-	-157.8
Quantity	-	-	-	-
Schedule	-	116.5	-	+116.5
Engineering	-	-	-	-
Estimating	-	4.0	-	+4.0
Other	-	-	-	-
Support	-	-18.9	-	-18.9
Subtotal	-	-56.2	-	-56.2
Total Changes	-	-84.8	-	-84.8
Current Estimate	-	2879.2	-	2879.2

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E-2C AEW (HAWKEYE), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
E-2C Aircraft

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2422.0	0.0	2422.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-29.1	-	-29.1
Other	-	-	-	-
Support	-	+9.8	-	+9.8
Subtotal	-	-19.3	-	-19.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	67.8	-	+67.8
Engineering	-	-	-	-
Estimating	-	-6.9	-	-6.9
Other	-	-	-	-
Support	-	-6.9	-	-6.9
Subtotal	-	+54.0	-	+54.0
Total Changes	-	+34.7	-	+34.7
Current Estimate	-	2456.7	-	2456.7

b. (U) Previous Change Explanations --

Procurement

Economic: Revised escalation rates
 Estimating: Repricing of A/C and GFE associated with negotiated cost and transfer of APN to RDT&E for Cooperative Engagement Capability (CEC) effort
 Support: Support cost for Vapor Cycle, Mission Computer, Satcom and recovery support of GFE

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E-2C AEW (HAWKEYE), December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):
E-2C Aircraft

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation rates (Economic)	N/A	-157.8
Change due to shift in procurement profile and FMS (Schedule)	+67.8	+116.5
Revised estimate of GFE and A/C cost (Estimating)	-6.9	+4.0
Reduced support requirements for Vapor Cycle, MCU, SATCOM and decrease spares requirements due to budget controls (Support)	-6.9	-18.9
Procurement Subtotal	<u>+54.0</u>	<u>-56.2</u>

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E-2C AEW (HAWKEYE), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Mission Computer Upgrade

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	223.9	260.0	0.0	483.9
Previous Changes:				
Economic	-0.1	-6.4	-	-6.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+22.3	-118.4	-	-96.1
Other	-	-	-	-
Support	-	+119.7	-	+119.7
Subtotal	+22.2	-5.1	-	+17.1
Current Changes:				
Economic	-6.3	-17.8	-	-24.1
Quantity	-	-	-	-
Schedule	-	7.7	-	+7.7
Engineering	-	-	-	-
Estimating	2.1	8.1	-	+10.2
Other	-	-	-	-
Support	9.7	-52.6	-	-42.9
Subtotal	+5.5	-54.6	-	-49.1
Total Changes	+27.7	-59.7	-	-32.0
Current Estimate	251.6	200.3	-	451.9

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E-2C AEW (HAWKEYE), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Mission Computer Upgrade

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	205.7	196.5	0.0	402.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+19.6	-97.5	-	-77.9
Other	-	-	-	-
Support	-	+96.4	-	+96.4
Subtotal	+19.6	-1.1	-	+18.5
Current Changes:				
Quantity	-	-	-	-
Schedule	-	4.7	-	+4.7
Engineering	-	-	-	-
Estimating	2.1	-1.7	-	+0.4
Other	-	-	-	-
Support	8.3	-38.2	-	-29.9
Subtotal	+10.4	-35.2	-	-24.8
Total Changes	+30.0	-36.3	-	-6.3
Current Estimate	235.7	160.2	-	395.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation rates
 Estimating: Revised estimated cost to cover transfer of APN to RDT&E for Cooperative Engagement Capability (CEC) effort

Procurement

Economic: Revised escalation rates
 Estimating: Adjusted flyaway estimate to cover support requirements
 Support: Adjustment to cover support requirements

E-2C AEW (HAWKEYE), December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):
Mission Computer Upgrade

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation rates (Economic)	N/A	-6.3
Repricing of support cost (Estimating)	+2.1	+2.1
Addition of support cost in FY 00 and FY01 (Support)	+8.3	+9.7
RDT&E Subtotal	<u>+10.4</u>	<u>+5.5</u>
(2) <u>Procurement</u>		
Revised escalation rates (Economic)	N/A	-17.8
Change due to shift in procurement profile (Schedule)	+4.7	+7.7
Adjusted flyaway estimate (Estimating)	-1.7	+8.1
Repricing of support cost (Support)	-38.2	-52.6
Procurement Subtotal	<u>-35.2</u>	<u>-54.6</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

E-2C Aircraft

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
82.333	-4.578	0.001	3.236	--	-0.792	--	-0.222	-2.355	79.978

Mission Computer Upgrade

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.284	-0.397	0.001	0.100	--	-1.116	--	0.997	-0.415	5.869

E-2C AEW (HAWKEYE), December 31, 1995

15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --			Initial Contract Price		
(U) <u>Mission Computer Upgrade:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Grumman Aerospace Corp, Bethpage, NY					
N00019-93-C-0205, CPIAF			\$155.2	\$0.0	0
Award: November 30, 1994					
Definitized: November 30, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$155.2	\$0.0	0	\$140.0	\$140.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date (12/31/95)			\$1.4	\$-2.2	
Net Change			\$1.4	\$-2.2	

Explanation of Change:

Cost: The positive CV was due to a variance in overhead during the November reporting period. Since contract start, a majority of the cumulative cost variance has been due to indirect rate fluctuations. If indirect costs are excluded from the calculation of CPI, it equates to 1.02. The Contract Work Breakdown Structure (CWBS) elements are the primary contributors to the cumulative CV.

Schedule: Indirect costs account for 67% of the cumulative SV. Indirect SV will not impact program schedule. The -\$1,427K indirect SV is indirect cost that has not yet been applied to behind schedule direct costs. The SPI equates to 0.94 if indirect costs are excluded from the calculation. Prime Mission Product Application software effort is of most concern due to negative float conditions.

b.(U) Procurement --			Initial Contract Price		
(U) <u>FY 95 PRODUCTION A/C:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
GRUMMAN AEROSPACE CORP, BETHPAGE, NY					
N00019-94-C-0020, FFP			\$231.2	\$0.0	4
Award: December 16, 1994					
Definitized: N/A					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$231.2	\$0.0	4	\$231.2	\$231.2	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

E-2C AEW (HAWKEYE), December 31, 1995

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 17.6% (3 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 19.8% (\$658.5 / \$3331.1)

E-2C Aircraft

- (1) Percent Program Completed: 27.3% (3 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 18.5% (\$531.8 / \$2879.2)

Mission Computer Upgrade

- (1) Percent Program Completed: 17.6% (3 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 28.0% (\$126.7 / \$451.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2010)</u>	<u>Total</u>
RDT&E	65.7	61.0	65.0	59.9	251.6
Procurement	322.3	209.5	163.1	2384.6	3079.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	388.0	270.5	228.1	2444.5	3331.1

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E-2C AEW (HAWKEYE), December 31, 1995

16b. (U) Program Funding Summary (Cont'd):
E-2C Aircraft

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

E-2C Aircraft

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2004)</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	322.3	209.5	154.6	2192.8	2879.2
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	322.3	209.5	154.6	2192.8	2879.2

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Mission Computer Upgrade

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2010)</u>	<u>Total</u>
RDT&E	65.7	61.0	65.0	59.9	251.6
Procurement	-	-	8.5	191.8	200.3
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	65.7	61.0	73.5	251.7	451.9

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E-2C AEW (HAWKEYE), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

c. (U) Program Summary -- Total Program

Fiscal Year	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
	Nonrec	Rec		Program	Oblli- gated	

Appropriation: RDT&E - All Sources

1994			17.8	18.0	18.0	15.1	2.0
1995			46.1	47.7	40.2	24.0	1.9
1996			57.8	61.0	38.9	3.6	2.0
1997			60.3	65.0			2.2
1998			36.4	40.1			2.2
1999			9.0	10.1			2.3
2000			3.0	3.5			2.2
2001			5.3	6.2			2.2
2002							2.2
Subtot			235.7	251.6	97.1	42.7	

Appropriation: Procurement - All Sources

1994			36.6	37.8	36.1	12.1	2.0
1995		249.7	269.6	284.5	255.6	61.6	1.9
1996		180.6	194.3	209.5	44.6	0.2	2.0
1997	1.4	151.4	147.9	163.1			2.2
1998	9.7	193.4	235.7	265.7			2.2

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E-2C AEW (HAWKEYE), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
	Nonrec	Rec		Program	Obligated Ex-pended	

Appropriation: Procurement - All Sources (Cont'd)

1999	4.9	238.3	268.9	309.8		2.3
2000	4.7	223.5	258.7	304.5		2.2
2001	1.0	241.8	268.0	322.5		2.2
2002		292.6	325.1	399.9		2.2
2003	25.3	238.0	293.7	369.2		2.2
2004	53.3	237.7	290.9	373.7		2.2
2005			2.2	2.9		2.2
2006			2.2	3.0		2.2
2007			2.3	3.1		2.2
2008			2.3	3.2		2.2
2010			18.5	27.1		2.2
Subtot	100.3	2247.0	2616.9	3079.5	336.3	73.9
Grand Total	100.3	2247.0	2852.6	3331.1	433.4	116.6

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E-2C AEW (HAWKEYE), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
E-2C Aircraft

c. (U) Annual Summary -- E-2C Aircraft

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy

1994				36.6	37.8	36.1	12.1	2.0
1995	4		249.7	269.6	284.5	255.6	61.6	1.9
1996	3		180.6	194.3	209.5	44.6	0.2	2.0
1997	2	1.4	145.4	140.2	154.6			2.2
1998	3	9.7	189.8	229.6	258.8			2.2
1999	4		238.3	262.3	302.2			2.3
2000	4		218.1	244.3	287.6			2.2
2001	4		233.9	256.3	308.4			2.2
2002	4		233.5	259.2	318.8			2.2
2003	4	25.3	233.3	284.2	357.2			2.2
2004	4	53.3	233.0	280.1	359.8			2.2
Subtot	36	89.7	2155.6	2456.7	2879.2	336.3	73.9	
Grand Total	36	89.7	2155.6	2456.7	2879.2	336.3	73.9	

The two (2) FMS aircraft budgeted in FY 00 are as yet unidentified; however, France has expressed intentions of purchasing two additional aircraft. France has not indicated in what year they will purchase the aircraft. Without FMS sales in FY 00 the unit cost of our aircraft purchases will increase approximately 8%.

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E-2C AEW (HAWKEYE), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Mission Computer Upgrade

c. (U) Annual Summary -- Mission Computer Upgrade

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1994				17.8	18.0	18.0	15.1	2.0
1995				46.1	47.7	40.2	24.0	1.9
1996				57.8	61.0	38.9	3.6	2.0
1997				60.3	65.0			2.2
1998				36.4	40.1			2.2
1999				9.0	10.1			2.3
2000				3.0	3.5			2.2
2001				5.3	6.2			2.2
2002								2.2
Subtot	3			235.7	251.6	97.1	42.7	

Appropriation: 1506 Aircraft Procurement, Navy

1994								2.0
1995								1.9
1996								2.0
1997	5		6.0	7.7	8.5			2.2
1998	3		3.6	6.1	6.9			2.2

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E-2C AEW (HAWKEYE), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Mission Computer Upgrade

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

1999		4.9		6.6	7.6		2.3
2000	5	4.7	5.4	14.4	16.9		2.2
2001	7	1.0	7.9	11.7	14.1		2.2
2002	46		59.1	65.9	81.1		2.2
2003	4		4.7	9.5	12.0		2.2
2004	4		4.7	10.8	13.9		2.2
2005				2.2	2.9		2.2
2006				2.2	3.0		2.2
2007				2.3	3.1		2.2
2008				2.3	3.2		2.2
2009							2.2
2010				18.5	27.1		2.2
Subtot	74	10.6	91.4	160.2	200.3		
Grand Total	77	10.6	91.4	395.9	451.9	97.1	42.7

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E-2C AEW (HAWKEYE), December 31, 1995

17. (U) Production Rate Data:

E-2C Aircraft

a. (U) Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	0/0
	Procurement	36/36

b. (U) Approved Design-to-Cost Objective -- N/A.

Mission Computer Upgrade

a. (U) Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	14/0
	Procurement	74/0

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

E-2C Aircraft

a. (U) Assumptions and Ground Rules --

Flight Hours Per Aircraft Per Month	42
Number of Aircraft/Squadron	4
Consumption Rate, Gal/Hr	344.0
POL Cost, JP-5, Per Barrel, FY 90	35.7
Date of estimate	12/94.

There is no antecedent program.

E-2C AEW (HAWKEYE), December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):
E-2C Aircraft

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Squadron	Avg Annual Cost Per (Antecedent)
Personnel	6.8	N/A
O&S Consumables	4.2	N/A
Direct Depot Maintenance	1.9	N/A
Sustaining Investment	1.8	N/A
Other Direct Costs	0.0	N/A
Indirect Costs	0.4	N/A
Total	15.1	N/A

c. (U) Contractor Support Costs -- None.

Mission Computer Upgrade

a. (U) Assumptions and Ground Rules --

No current information is available at this time for the Mission Computer Upgrade

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

Javelin (AAWS-M), December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1109 ICN O38061 (Navy)
APPN 2032 ICN CA0269 (Army)
APPN 2032 ICN HO6102 (Army)
APPN 2032 ICN HO6300 (Army)

5. (U) Related Programs: None.

6. (U) Mission and Description:

The Javelin (AAWS-M) is a manportable antitank weapon system designed to provide high lethality against advanced armor and is envisioned as a simple-to-operate, easily and economically maintained, rugged and reliable infantry system for the U.S. Army and U.S. Marine Corps (USMC). The Javelin is comprised of two major components: a reusable Command and Launch Unit (CLU) and a missile sealed in a disposable launcher container. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather. The CLU may be used in stand alone mode for battlefield surveillance and target detection. For operation of the system, the round must be mated with the CLU. The CLU will provide a go/no-go status of the CLU and round. The missile, with a warhead designed against both conventional and reactive armor, may be used at the gunner's discretion in top attack or direct fire mode. Top attack is the normal mode of operation and direct fire mode is for engaging targets under cover. The Javelin will replace the DRAGON.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
The Milestone Decision Review I (MDR I)/Defense System Acquisition Review Council (DSARC) review process was completed with the issue of the Secretary of Defense Decision Memorandum (SDDM) on 15 May 86 authorizing the Advanced Antitank Weapon System - Medium (AAWS-M) and the AAWS-Heavy entry into the Proof of Principle (POP) phase. Three AAWS-M POP contracts, \$30 million each for a period of performance of 27 months, were awarded on 28 Aug 86 to Ford Aerospace and Communications Corporation, Hughes Aircraft Company, and Texas Instruments, Incorporated.

Following successful completion of the POP program by all three contractors, the Full Scale Development (FSD)/Low Rate Initial Production (LRIP) Request For Proposal (RFP) was released on 6 Sep 88, and the proposals were received on 7 Nov 88. On 9 Feb 89, the Army announced that the Texas Instruments and Martin Marietta Imaging Infrared Fire-&-Forget (IIR F&F) technology was selected for the FSD/LRIP contract award, contingent upon Department of Army (DA) and Office of Secretary of Defense (OSD) program approval. The Under Secretary of the Army Acquisition Decision Memorandum, dated 17 Mar

Javelin (AAWS-M), December 31, 1995

7a. (U) Program Highlights (Cont'd):

89, authorized the AAWS-M to proceed into the FSD phase, subject to Defense Acquisition Board (DAB) review. The Secretary of Defense Acquisition Decision Memorandum (ADM) was issued on 19 Jun 89 approving entry into the FSD phase. A contract was awarded to a Texas Instruments/Martin Marietta Joint Venture on 21 Jun 89.

Javelin was selected as the popular name for the AAWS-M Weapon System requirements. A DAB review was held 5 Dec 90 which approved a change to the Acquisition Program Baseline (APB), increasing the system weight threshold to 49.5 pounds. As a result of cost growth and technical performance problems related to the extensive effort to maintain the success-oriented 36 month schedule, the Baseline Test directed by OSD exacerbating an already demanding (compressed) test schedule, Focal Plane Array (FPA) performance growth being slower than anticipated and weight reduction efforts being more difficult than expected, the Army Acquisition Executive (AAE) and the Defense Acquisition Executive (DAE) approved a restructured 54-month Engineering and Manufacturing Development (EMD) phase.

All Engineering and Manufacturing Development (EMD) testing (both developmental and operational with two minor exceptions) was completed in Dec 93.

A fixed price incentive, Low Rate Initial Production (LRIP) I contract was awarded 23 Jun 94 to TI/Martin Javelin Joint Venture in the amount of \$204.1 M.

As a result of the 20 Jun 94 Defense Acquisition Board (DAB) review, the Army was directed to submit a Cost Reduction Plan (CRP) to OSD by 1 Sep 94 and to add an LRIP III to provide time to complete development of the new warhead. On 31 Aug 94 the Cost Reduction Plan (CRP) was approved by the Army Acquisition Executive (AAE) and forwarded to OSD. The CRP will be executed with the currently programmed funds and will significantly reduce the cost of the Javelin.

On 22 Dec 94 a letter contract was definitized which continues alternate warhead development and the Enhanced Producibility Program (EPP) I was implemented during the fourth Qtr CY 94. On 7 Feb 1995, the proposed Acquisition Program Baseline (APB) incorporating an 11 year program with full cost and quantity reductions was approved.

b. (U) Significant Developments Since Last Report --

A fixed price incentive (with a cost plus incentive fee provision for Interim Contractor Support) contract for Low Rate Initial Production II (LRIP II) was awarded on 9 Mar 95. In Aug 95 production of the low cost Missile Simulation Round (MSR) was begun at the Ft. Benning, GA Training Support Center. The rollout ceremony

Javelin (AAWS-M), December 31, 1995

7b. (U) Program Highlights (Cont'd):

for the first Javelin production round was held 29 Sep 95 at the Lockheed Martin Pike County Operations Plant which is located in Troy, AL. In addition, one Command Launch Unit (CLU) was integrated, tested and accepted in time for the rollout ceremony.

Javelin (AAWS-M) is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There is a schedule breach of more than six months to the approved Acquisition Program Baseline (APB) dated 7 Feb 95. A PDR and an APB change request will be submitted. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Joint Service Op Requirement Approved	APR 86	APR 86	APR 86
Milestone I (DSARC)	MAY 86	MAY 86	MAY 86
Proof of Principle Contract Award	AUG 86	AUG 86	AUG 86
Proof of Principle Complete	DEC 88	DEC 88	DEC 88
Milestone II (DAB)	MAY 89	MAY 89	JUN 89
FSD Contract Award	JUN 89	JUN 89	JUN 89
Pre-Prod Qual Test			
Start	JUN 90	JUN 90	JUN 90
Complete	JAN 92	DEC 93	DEC 93
Training Force Dev Test and Experimentation (FDT&E)			
Start	MAR 91	FEB 93	FEB 93
Complete	AUG 91	APR 93	APR 93
Prototype Delivery	APR 91	NOV 92	NOV 92
IOT&E			
Start	JAN 92	SEP 93	SEP 93
Complete	APR 92	DEC 93	DEC 93
LRIP Decision (DAB)	JUN 92	JUN 94	JUN 94
LRIP I Contract Award	JUN 92	APR 94	JUN 94
LRIP II Contract Award	JUN 93	MAR 95	MAR 95
First LRIP Delivery	SEP 93	OCT 95	OCT 95
Prod Verification Test			
Start	SEP 93	OCT 95	NOV 95 (Ch-1)
Complete	FEB 94	APR 96	APR 96

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
LRIP III Contract Award	N/A	MAR 96	FEB 96 (Ch-2)
LRIP II Delivery	N/A	OCT 96	OCT 96
Limited User Test			
Start	N/A	APR 96	APR 96
Complete	N/A	MAY 96	MAY 96
Live Fire Test			
Start	FEB 94	JUN 96	JUN 96
Complete	MAY 94	DEC 96	DEC 96
First Unit Equipped	FEB 94	JUN 96	JUN 96
(b)(1)			
Milestone IIIB (DAB)	JUN 94	N/A	N/A
Full Rate Production (ASARC)	N/A	APR 97	APR 97
Full Rate Production Contract Award	JUN 94	MAY 97	MAY 97
LRIP III Delivery	N/A	OCT 97	OCT 97
First Full Rate Production Delivery	JUN 95	OCT 98	OCT 98
Follow-on Operational Test and Evaluation			
Start	N/A	OCT 98	OCT 98
Complete	N/A	DEC 98	DEC 98
Organic Support Capability	N/A	OCT 00	OCT 00
Depot Support Capability	N/A	OCT 00	JUL 01

b. (U) Previous Change Explanations --

Combination of delayed hardware deliveries and delay in obtaining safety certification for man firing of missiles during tests delayed Training FDT&E start and stop dates. Initial Operational Test and Evaluation (IOT&E) start defined as start of actual test not start of training of personnel to perform test. IOT&E complete estimate revised by Operational Evaluation Command (OEC). On 27 Sep 91 an Acquisition Decision Memorandum (ADM) was approved which changed the Javelin Engineering and Manufacturing Development (EMD) phase from a 36-month schedule to 54-month schedule. Consolidated Long Lead Time Item (LLTI) and Low Rate Initial Production (LRIP) II procurement actions into a single contract. Contract award changed from Jul 95 to Jan 95. Milestone IIIB date changed from Jul 96 to Jan 96 and Full Rate Production (FRP) Contract Award changed from Jul 97 to Jan 97. Dates rescheduled for consistency with previous change rescheduling LRIP II contract award. Schedule milestone changes are a result of extending Low Rate Initial Production (LRIP) an additional year as directed by the Defense Acquisition Board's (DAB) Acquisition Decision Memorandum (ADM) dated 11 Jul 94. On 7 Feb 1995, an Acquisition Program Baseline (APB) incorporating an 11 year

Javelin (AAWS-M), December 31, 1995

9b. (U) Schedule (Cont'd):

program with full cost and quantity reductions was approved. During this latest APB process, schedule milestones were added, deleted and renamed.

c. (U) Current Change Explanations --

Ch-1 Production Verification Test start date changed from Oct 95 to Nov 95 to reflect actual start.

Ch-2 Low Rate Initial Production III contract award date changed from

(b)(1)

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --		Approved Program	Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

(b)(1)

System weight (lbs)	33	33	/ 45.5	45.50	45.50
Missile operational reliability	.89	.89	/ .82	.78	.93
Cmd Launch Unit MTBOMF (hrs)	126	126	/ 76	77	142
Cmd Launch Unit MTTR (hrs)	<1.5	<1.5	/ 1.5	.77	.77

(b)(1)

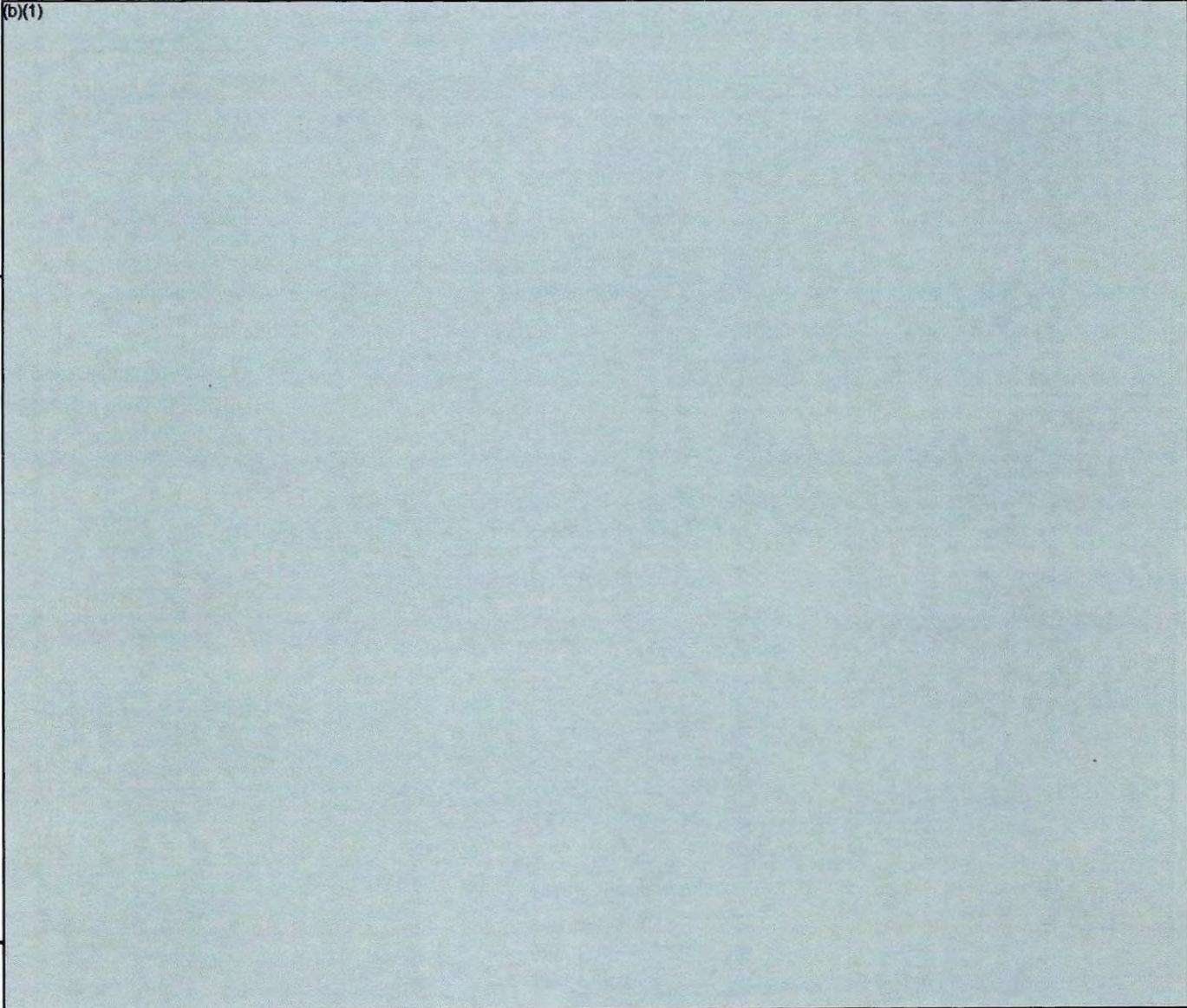
Javelin (AAWS-M), December 31, 1995

10a. ~~(S)~~ Performance Characteristics (Cont'd):

1. (U) Minimum range (Full) and maximum range. Full lethality must be met at this range.

2. (U) Probability of hit given a reliable round (Ph/reliable round). Hit probabilities are specified for 7 km visibility (day/night) in benign environments. Must hit a fully exposed standard NATO target (2.3m H x 2.3m W x 4.6m L) stationary or moving (crossing velocity up to 20 km/hr) at all ranges (min to max). The hit probability must be attained given any attack azimuth or elevation angle (relative to target) given a shot with a reliable system.

(b)(1)



(b)(1)

ACRONYMS:

FO - Fog Oil
WP - White Phosphorous
MTBOMF - Mean Time Between Operational Mission Failures.
MTTR - Mean Time To Repair.
IOT&E - Initial Operational Test and Evaluation.

b. (U) Previous Change Explanations --

As a result of the 5 Dec 90 DAB, a revised APB was approved increasing the system weight threshold to 49.5 pounds. Current estimate values are projected performance at the Full Rate Production ASARC and were updated following completion of Engineering Manufacturing Development (EMD) testing. Missile operational reliability and Command Launch Unit (CLU) MTBOMF current estimates include incorporation of corrective actions to problems identified during IOT&E.

c. (U) Current Change Explanations --

(b)(1)

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

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Javelin (AAWS-M), December 31, 1995

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development	Approved	Current
a. (U) Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	549.2	718.4	717.6
Procurement	2849.6	2313.6	2395.9
Round Flyaway	(2447.2)		(1816.9)
CLU Flyaway	(240.3)		(360.8)
Total Flyaway	(2687.5)		(2177.7)
Other Weapon System	(39.0)		(76.8)
Training Devices	(96.7)		(118.8)
Total Other Wpn Sys	(135.7)		(195.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.4)		(22.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	3398.8	3032.0	3113.5
Escalation	537.7	999.7	712.7
Development (RDT&E)	(-1.4)	(29.2)	(27.5)
Procurement	(539.1)	(970.5)	(685.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	3936.5	4031.7	3826.2

Values shown include USMC program.

b. (U) Quantity --			
Development (RDT&E)	81	48	48
Procurement	<u>70550</u>	<u>31269</u>	<u>31269</u>
Total	70631	31317	31317

Note: Excludes 165 RDTE prototypes from the SAR Baseline and 154 from the Current Estimate that are not considered fully configured.

A system is comprised of rounds, CLUs, associated training devices and initial spares with the round the designated end item. Of the total procurement quantity shown above, 2585 rounds (FY94-703, FY95-872, and FY96-557) or 6.8% will be produced during Low Rate Initial Production (LRIP). Congressional increase of \$35.5M in FY 96 allowed the quantity to change from 557 to 1010 rounds with an accompanying increase of CLUs and associated training devices.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

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Javelin (AAWS-M), December 31, 1995

11d. (U) Total Program Cost and Quantity (Cont'd):

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 15, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 07, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>VCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	3113.5	3032.0	
(2) Quantity	31317	31317	
(3) Unit Cost	0.099	0.097	2.69
b. (U) Procurement			
(1) Cost (BY90\$)	2395.9	2313.6	
(2) Quantity	31269	31269	
(3) Unit Cost	0.077	0.074	3.56

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Javelin (AAWS-M), December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	547.8	3388.7	0.0	3936.5
Previous Changes:				
Economic	-2.5	+33.1	-	+30.6
Quantity	-	-1523.9	-	-1523.9
Schedule	+102.0	+764.5	-	+866.5
Engineering	+4.5	+21.2	-	+25.7
Estimating	+93.7	+411.8	-	+505.5
Other	-	-	-	-
Support	-	+197.5	-	+197.5
Subtotal	+197.7	-95.8	-	+101.9
Current Changes:				
Economic	-2.1	-189.2	-	-191.3
Quantity	-	-	-	-
Schedule	-	-71.1	-	-71.1
Engineering	3.1	-	-	+3.1
Estimating	-1.4	137.2	-	+135.8
Other	-	-	-	-
Support	-	-88.7	-	-88.7
Subtotal	-0.4	-211.8	-	-212.2
Total Changes	+197.3	-307.6	-	-110.3
Current Estimate	745.1	3081.1	-	3826.2

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Javelin (AANS-M), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	549.2	2849.6	0.0	3398.8
Previous Changes:				
Quantity	-	-1017.6	-	-1017.6
Schedule	+97.1	-	-	+97.1
Engineering	+3.8	+18.6	-	+22.4
Estimating	+66.5	+377.1	-	+443.6
Other	-	-	-	-
Support	-	+121.6	-	+121.6
Subtotal	+167.4	-500.3	-	-332.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	2.5	-	-	+2.5
Estimating	-1.5	112.1	-	+110.6
Other	-	-	-	-
Support	-	-65.5	-	-65.5
Subtotal	+1.0	+46.6	-	+47.6
Total Changes	+168.4	-453.7	-	-285.3
Current Estimate	717.6	2395.9	-	3113.5

b. (U) Previous Change Explanations --

RDT&E

Economic: revised escalation indices.
 Schedule: revised development schedule from 36 to 54 months.
 Engineering: revised test plan; increased cost for additional alternate warhead program; added funding to continue alternate warhead integration.
 Estimating: adjustment for current and prior year inflation; revised estimate due to technology selection; revised estimate to reflect actual costs; lower subcontractor cost; revised subcontractor estimates; program reduced to obligated amount to close accounts in prior years; increased contractor estimate due to higher overhead rates

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Javelin (AAWS-M), December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

resulting from reduced business base and slow manpower reductions following completion of EMD.

Procurement

Economic: revised escalation indices; adjustment for negative program change.

Quantity: decrease of 4065 rounds (USMC); reduction of 2062 CLUs from 5917 to 3855; reduction of 32874 rounds from 66485 to 33611 (Army and USMC); reduction of 591 CLUs from 1055 to 464 (USMC); reduction of 2342 rounds from 7011 to 4669 (USMC).

Schedule: revised delivery schedules; restructured program delayed procurement 1 year; revised USMC delivery schedule; revised procurement buy schedule; change in procurement buy schedule related to CLU; change in procurement buy schedule related to rounds.

Engineering: add Built In Test Equipment (BITE) to CLU; allocation resulting from quantity decrease.

Estimating: revised trainer cost and refined missile cost; revised hardware unit costs; revised subcontractor cost (round, CLU and trainers); correction of SAR variances to reconcile flyaway and support cost; adjustment for current and prior inflation; revised subcontractor estimates; allocation resulting from quantity decrease; revised

contractor/subcontractor estimates based on LRIP I proposal; decrease due to cost reduction program.

Support: additional costs due to revised delivery schedule; increased support due to higher hardware cost; correction of SAR variances to reconcile flyaway and support cost; additional support cost due to revised delivery schedule; increase in trainer cost; added Interim Contractor Support; higher Depot Maintenance Plant Equipment cost; higher Program Management cost; decreased CLU, round and training devices requirement due to quantity reduction; adjustment for current and prior inflation; decrease due to change in maintenance concept to Life Cycle Contractor Support and decreased CLU and round requirement due to quantity reduction.

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Javelin (AAWS-M), December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	--	-2.1
Adjustment for current and prior inflation. (Estimating)	+1.8	+2.1
Added funding for tracker upgrade program. (Engineering)	+2.5	+3.1
Revised estimate for Limited User Test. (Estimating)	+1.1	+1.4
Revised estimate to reduce prior year amounts to actual. (Estimating)	-4.4	-4.9
RDT&E Subtotal	<u>+1.0</u>	<u>-0.4</u>
(2) <u>Procurement</u>		
Revised Escalation Indices. (Economic)	N/A	-199.4
Economic Adjustment for negative program change. (Economic)	N/A	+10.2
Adjustment for Current and Prior Inflation. (Estimating)	+10.5	+12.5
Adjustment for Current and Prior Inflation. (Support)	+2.1	+2.5
Accelerated procurement buy schedule related to round from 11 to 9 years. (Schedule)	--	-66.8
Accelerated procurement buy schedule related to CLU from 10 to 9 years. (Schedule)	--	-4.3
Increased estimate for recurring cost based on contract award data for LRIP I and II. (Estimating)	+101.6	+124.7
Reduced support requirement due to schedule acceleration. (Support)	-67.6	-91.2
Procurement Subtotal	<u>+46.6</u>	<u>-211.8</u>

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.056	-0.005	0.022	0.025	0.001	0.020	--	0.003	0.066	0.122

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --

(U) LRIP I:
 TI/Martin Javelin, Lewisville, TX
 DAAH01-94-C-0023, FPI
 Award: June 23, 1994
 Definitized: June 23, 1994

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$204.1	\$234.2	703

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$203.9	\$234.2	703

	Estimated Price At Completion	
	<u>Contractor</u>	<u>Program Manager</u>
	\$206.3	\$209.9

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.3	\$-4.8
Cumulative Variances To Date (12/31/95)	\$-7.3	\$-9.8
Net Change	\$-8.6	\$-5.0

Explanation of Change:

The unfavorable cost and schedule variances are related to the missile, CLU basic sight and CLU Integration and Assembly (I & A) areas.

(U) LRIP II:
 TI/Martin Javelin, Lewisville, TX
 DAAH01-95-C-0095, FPI/CPIF
 Award: March 9, 1995
 Definitized: March 9, 1995

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$167.6	\$181.4	872

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$167.5	\$181.4	872

	Estimated Price At Completion	
	<u>Contractor</u>	<u>Program Manager</u>
	\$174.4	\$174.2

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15. (U) Contract Information (Cont'd):

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date (12/31/95)	\$1.7	\$-0.4
Net Change	\$1.7	\$-0.4

Explanation of Change:

The unfavorable schedule variance is related to the missile and contractor support for Interim Contractor Support (ICS). The favorable cost variance is related to the missile, CLU basic sight, System Engineering/Project Management and contractor support for ICS.

Contract estimated prices do not include Initial Contractor Support.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 64.7% (11 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 36.1% (\$1381.1 / \$3826.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY86-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2002)	<u>Total</u>
RDT&E	741.0	1.0	1.6	1.5	745.1
Procurement	438.2	200.9	191.5	2250.5	3081.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1179.2	201.9	193.1	2252.0	3826.2

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				62.0	55.1	55.1	55.1	2.8
1987				45.9	42.0	42.0	42.0	2.7
1988				31.0	29.5	29.5	29.5	3.0
1989				99.6	98.7	98.7	98.7	4.2
1990				132.9	136.7	136.7	136.4	4.1
1991				74.7	79.8	79.8	79.8	4.3
1992				111.9	122.3	122.3	122.2	3.0
1993				89.1	99.7	99.7	99.3	2.4
1994				41.4	47.2	47.2	46.3	2.0
1995				25.8	30.0	25.0	15.0	1.9
1996				0.8	1.0	0.9		2.0
1997				1.3	1.6			2.2
1998				1.2	1.5			2.2
Subtot	48			717.6	745.1	736.9	724.3	

Appropriation: 2032 Missile Procurement, Army

1994	703	41.7	148.0	194.0	225.6	210.2	110.5	2.0
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Javelin (AAWS-M), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (t)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

1995	872	8.3	149.7	178.9	212.6	211.2	32.0	1.9
1996	1010	1.8	148.9	166.6	200.9	17.0	4.9	2.0
1997	1020	2.7	110.0	131.3	162.1			2.2
1998	1050	1.2	106.9	120.6	152.3			2.2
1999	3706	21.5	230.9	264.7	341.6			2.3
2000	7434	34.0	386.0	459.2	605.6			2.2
2001	10358	18.6	439.4	489.5	659.7			2.2
2002	447		46.4	79.6	109.7			2.2
Subtot	26600	129.8	1766.2	2084.4	2670.1	438.4	147.4	
Army	26648	129.8	1766.2	2802.0	3415.2	1175.3	871.7	

Appropriation: 1109 Procurement, Marine Corps

1997	148	0.5	17.7	23.8	29.4			2.2
1998	195	0.2	18.9	26.1	32.9			2.2
1999	930	5.4	58.2	68.1	87.9			2.3
2000	1087	5.0	56.9	65.4	86.2			2.2
2001	1334	2.4	57.7	64.1	86.4			2.2
2002	975		58.8	64.0	88.2			2.2

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		FY90 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

Appropriation: 1109 Procurement, Marine Corps (Cont'd)

Subtot	4669	13.5	268.2	311.5	411.0			
Navy	4669	13.5	268.2	311.5	411.0			
Grand Total	31317	143.3	2034.4	3113.5	3826.2	1175.3	871.7	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date --
- | | |
|-------------|--------------------|
| RDT&E | <u>Plan/Actual</u> |
| Procurement | 202/202 |
| | 13/13 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The Javelin system support concept is consistent with existing Army policy as follows:

- (1) Command Launch Unit (CLU) is a 3 level organic support concept. Unit level is responsible for visual inspection, exterior cleaning, battery replacement and troubleshooting thru the Built In Test (BIT) capability. Removal/replacement of components will be accomplished at the Direct Support (DS) level. Depot level capability will exist for complete overhaul/repair of the unit.
- (2) Maintenance of the round is a "wooden round" concept.
- (3) Contractor Logistics Support (CLS) of training devices will be used for the life of the system.

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Javelin (AAWS-M), December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

Interim Contractor Support (ICS) for supply support and maintenance above unit level will be utilized for the first 60 months. CLU repair will consist of complete repair of the CLU's economically repairable circuit cards, assemblies, and components. Missile repair (resulting from surveillance checks) will be performed by the system's prime contractor.

Fielding begins in Jun 96. Sustainment covers 20 (full deployment) years of operation, maintenance, and modification. Military pay and allowances represent over 59% of the sustainment program costs not including contractor support costs. Sustainment for the antecedent system, DRAGON, covers 33 (full deployment) years of operation, maintenance, and modification.

Personnel costs cover military pay and allowances less costs associated with permanent change of station (PCS). O & S consumables consist of petroleum, oil, and lubricants plus ammunition/missiles (training ammo/missiles and war reserve). Direct depot maintenance consists of civilian labor, material, transportation, sustainment of training devices, system software maintenance, and training devices software maintenance. Sustaining investment includes repair parts (including war reserve), spares (including war reserve), modifications/kits, and software upgrades. Other direct costs include field maintenance civilian labor, system specific replacement training, quarters, maintenance, and utilities. Indirect cost consists of costs of PCS, system project management, stockpile reliability, and other O & M and MIPA funded items less training device software maintenance and software upgrades.

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Javelin (AAWS-M), December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year JAVELIN	Avg Annual Cost Per Year DRAGONII (ANTECEDENT)
PERSONNEL	46.3	113.3
O&S CONSUMABLES	0.7	0.0
DIRECT DEPOT MAINTENANCE	6.1	14.2
SUSTAINING INVESTMENT	9.4	20.9
OTHER DIRECT COST	9.2	9.5
INDIRECT COSTS	6.1	4.7
Total	77.8	162.6

Estimate includes contractor cost elements.

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
ICS	9.9	9.6	5.7	13.8	39.0
CLS	---	---	---	182.3	182.3
Total	9.9	9.6	5.7	196.1	221.3

Acronyms:

ICS - Interim Contractor Support
CLS - Contractor Logistics Support

Javelin (AAWS-M) Program Office Estimate (POE), Alternative (i.e. updated quantities) to April 94 POE approved by CAIG, average over 11 Years Fully Fielded (i.e. no ramp up or draw down) Sustainment Years (FY 05 through FY 15), Army Only;

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18c. (U) Operating and Support Costs (Cont'd):

Antecedent - DRAGON II Life Cycle Cost Estimate, IAAWS COEA, Oct
1988, 33 Years Sustainment, Army Only.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A) 823)
PROGRAM: MIII GRP - Phase 1

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Minuteman III Guidance Replacement Program

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

OO-ALC/LM	COL TERRENCE CROSSKY
6014 DOGWOOD AVENUE	Assigned: June 1, 1994
HILL AFB, UT 84056-5816	AV 777-8645 COMM (801) 777-8645

4. (U) Program Elements/Procurement Line Items:

SAF/PAS

RDT&E:
PE 0101213F (Shared), 0604312F, 0604851F

PROCUREMENT:
APPN 3020 ICM LGM30G (Air Force)

96-038

5. (U) Related Programs:
Rapid Execution And Combat Targeting (REACT), Single Reentry Vehicle (SRV), Propulsion Replacement Program (PRP).

~~Classified by: [redacted]~~
~~Declassify on: [redacted]~~
~~Declassify on: [redacted]~~

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MMIII GRP - Phase 1, December 31, 1995

6. (U) Mission and Description:

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 Minuteman II and Peacekeeper are retired. The guidance electronics will be replaced since current electronic components continue to degrade and are projected to become unreliable as early as 1997 and unsupportable as early as 1998. GRP replaces 1960's guidance system electronics and protects the option for future implementation of the Mark 21 RV/W87 warhead and an advanced inertial measurement unit (IMU), if required.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In Jul 92, a report was sent to Congress defining the replacement of the Minuteman III Guidance System. Based on this report, the Joint Requirements Oversight Council (JROC) in Nov 92, validated a Mission Need Statement (MNS) for a future MM III Guidance System. In Aug 93, the Air Force Systems Acquisition Review Council (AFSARC) approved the GRP Milestone I/II and in Aug 93 the Engineering and Manufacturing Development (EMD) contract was awarded to Rockwell International. Fact of life changes in the program resulted in a new Acquisition Program Baseline (APB) in May 94. In turn, the Preliminary Design Review (PDR) changed from Sep 94 to Aug 95 and the Critical Design Review (CDR) changed from Sep 95 to May 96. These deviations did not impact program executability or the ability to satisfy First Asset Delivery (FAD). In Feb 94, the program conducted a successful System Design Review (SDR) which defined the baseline design, fabrication, and support concepts and provided viable, cost effective solutions to satisfy program requirements. In Dec 94 the Interim Design Review (IDR) approved the Engineering Model (EM) baseline design. The program was restructured in FY95 due to budget reductions (not technical performance), and a new Acquisition Program Baseline (APB) was approved 12 July 1995. There were some changes to program milestone dates but these changes did not change the program's content.

b. (U) Significant Developments Since Last Report --

The Government/Rockwell Guidance Replacement Program (GRP) Team conducted an integrated technical-financial baseline review and established an agreed-to program estimate at completion (EAC). The EAC currently reflects a program growth of \$18M over the target cost. (Six Million dollars of Government directed work is expected to lower the program growth to \$12M.) The program growth is due to additional effort required to improve Life Cycle Cost (LCC), overcome technical problems and address potential future technical risks. This expected cost growth will be managed within existing program funded baseline.

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MMXII GRP - Phase 1, December 31, 1995

7b. (U) Program Highlights (Cont'd):

The program fabricated several production quality Missile Guidance Computer (MGC), Missile Guidance Set Control (MGSC), and modified the Gyro Stabilized Platform (GSP) Engineering Models (EMs). Integrated testing of the EMs has continued using prototypes of Operational Ground Program (OGP) and Operational Flight Program (OFF) software. The majority of EM missile guidance set control (MGSC) test software has been coded.

All EM Guided Missile Set Control Test Stations (GMSCTS) and Gyro Test Stations (GTS) have been fabricated and support Aerospace Vehicle Equipment (AVE) integration testing.

The Trainer Integrated Product Team (IPT) conducted the final pre-modification functional test on the Control Monitor Procedures Trainer (CMPT) on 8 Dec 95.

The GRP Codes Critical Design Review (CDR) was conducted 14 Dec 95. All Requests for Actions (RFAs) were closed by 18 Dec 95.

An AVE Preliminary Design Review (PDR) was conducted 20 Dec 95. The PDR resulted in 3 category A RFAs. The AVE PDR was closed 20 Feb 96 consistent with the Acquisition Program Baseline (APB). The AVE Missile Guidance Computer (MGC) Engineering Model #2 was sold off at Honeywell and EM #3 has progressed on schedule.

The Mod 7 Telemetry wafer upgrade EM modules are in fabrication. The GRP Test Evaluation Master Plan (TEMP) is being updated and will be approved by Apr 96.

The Program is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date --

Estimated program costs were reduced to accommodate directed budget reductions. PBD 604 reduced the GRP budget profile due to revised inflation prior to release of official OSD inflation indices. When the inflation indices used in this SAR were applied to the post PBD 604 budget profile, the GRP production base year funding profile (BYF) reflects an artificial increase of \$11.6M in program growth, unrelated to program content adjustments.

8. (U) Threshold Breaches:

There are no breaches to the approved AFAB Acquisition Program Baseline (APB) dated 12 Jul 95, and no Runn-McCurdy unit cost breaches.

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MMIII GRP - Phase 1, December 31, 1995

9. (U) Schedule:

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I/II AFSARC	AUG 93	AUG 93	AUG 93
Engineering and Manufacturing Development Contract Award	AUG 93	AUG 93	AUG 93
Preliminary Design Review (PDR) Complete	SEP 94	FEB 96	FEB 96
Critical Design Review (CDR) Complete	SEP 95	FEB 97	FEB 97
AF QT&E Start	MAY 95	MAY 96	MAY 96
Complete	MAY 97	AUG 97	AUG 97
Low Rate Initial Production (LRIP) Contract Award	JUL 96	JUN 97	JUN 97
AF QOT&E Integration Demonstration Flight (IDF)	NOV 96	JAN 98	JAN 98
Milestone III AFSARC	MAY 97	MAR 98	MAR 98
First Asset Delivery (FAD) to User	SEP 97	SEP 98	SEP 98
Organic Support Capability	SEP 97	SEP 98	SEP 98
Service Depot Support Date	SEP 98	SEP 99	SEP 99
Initial Operational Capability (IOC)	MAR 98	JUL 99	JUL 99

b. (U) Previous Change Explanations --

Changes reflect the Acquisition Program Baseline (APB) approved 12 Jul 95. Preliminary Design Review (PDR) changed from May 95 to Feb 96. Critical Design Review (CDR) changed from Apr 96 to Feb 97. Air Force Qualification Testing and Evaluation (AFQT&E) start/finish changed from Oct 95/ Jun 97 to May 96/ Aug 97. Low Rate Initial Production (LRIP) changed from Sep 96 to Jun 97. Integration Demonstration Flight (IDF) changed from Feb 97 to Jan 98. Milestone III changed from Sep 97 to Mar 98. First Asset Delivery (FAD) changed from Jul 98 to Sep 98. Service Depot Support Date (SDSD) changed from To Be Determined (TBD) to Sep 99. Initial Operational Capability (IOC) changed from TBD to Jul 99.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:
Acquisition Decision Memorandum dated August 31, 1993.

(U) Approved Program:
Approved Acquisition Program Baseline dated July 12, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
-----------------------	----	--	---------------------------	---------------------

(b)(1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum dated August 31, 1993.

(U) Approved Program:

Approved Acquisition Program Baseline dated July 12, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

a. (U) Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	423.3	467.1	461.9
Procurement	1040.3	1044.1	1071.1
Total Fly-Away	(950.9)		(1000.6)
Total Weapon Other System	(6.8)		(8.1)
Peculiar Support	(47.9)		(17.4)
Initial Spares	(34.7)		(45.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 93 Base-Year \$	1463.6	1511.2	1533.0
 Escalation	 172.6	 327.6	 233.3
Development (RDT&E)	(29.0)	(42.8)	(31.8)
Procurement	(143.6)	(284.8)	(201.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1636.2	1838.8	1766.3

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11b. (U) Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	652	652	652
Total	652	652	652

Note: Excludes 11 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

The LRIP quantities approved at Milestone II were 46. This is the only LRIP Buy.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
Acquisition Decision Memorandum dated August 31, 1993.

(U) Approved Program:
Approved Acquisition Program Baseline dated July 12, 1995.

12. (U) Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (JUL 95 APB)	Percent Change
a. (U) Total Program			
(1) Cost (\$Y93\$)	1533.0	1511.2	
(2) Quantity	652	652	
(3) Unit Cost	2.351	2.318	1.44
b. (U) Procurement			
(1) Cost (\$Y93\$)	1071.1	1044.1	
(2) Quantity	652	652	
(3) Unit Cost	1.643	1.601	2.59

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MMIII GRP - Phase 1, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	452.3	1183.9	0.0	1636.2
Previous Changes:				
Economic	+4.8	+85.6	-	+90.4
Quantity	-	-	-	-
Schedule	+63.7	+71.4	-	+135.1
Engineering	-26.0	-	-	-26.0
Estimating	+15.1	+4.6	-	+19.7
Other	-	-	-	-
Support	-	-16.6	-	-16.6
Subtotal	+57.6	+145.0	-	+202.6
Current Changes:				
Economic	-10.2	-88.9	-	-99.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	18.9	-	+18.9
Estimating	-6.0	13.7	-	+7.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-16.2	-56.3	-	-72.5
Total Changes	+41.4	+88.7	-	+130.1
Current Estimate	493.7	1272.6	-	1766.3

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	423.3	1040.3	0.0	1463.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	+56.0	+26.0	-	+82.0
Engineering	-24.4	-	-	-24.4
Estimating	+12.2	-3.3	-	+8.9
Other	-	-	-	-
Support	-	-18.9	-	-18.9
Subtotal	+43.8	+3.8	-	+47.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	15.4	-	+15.4
Estimating	-5.2	11.6	-	+6.4
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-5.2	+27.0	-	+21.8
Total Changes	+38.6	+30.8	-	+69.4
Current Estimate	461.9	1071.1	-	1533.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised inflation indices.

Schedule: Schedule stretch due to production funding cut in FY 97 (Maintain RMD critical skills base for production requirements).

Engineering: Descope of Global Positioning System (GPS) feature from GRP and limited development of memory sizing/timing through PDR for both Advanced Inertial Measurement System (AIMS) and MK21.

Estimating: Adjustments for program requirements currently under service review.

Revised estimate due to miscellaneous program funding adjustments. Increased Integration

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13b. (U) Cost Variance Analysis (Cont'd):

Demonstration Flight (IDF) costs associated with increased test range costs. Adjustments reflect rephased program schedule. Increased Strategic Missile Integration Complex (SMIC) test equipment costs due to present configuration problems.

Procurement

- Economic: Economic Adjustment for Negative Program Change. Revised escalation indices.
- Schedule: Change in annual procurement buy profile. Procurement buy moved from FY96 to FY97. Schedule change due to program restructure.
- Estimating: Adjustments for program requirements currently under service review. Adjustments were made to reflect changes in the buy schedule and to reflect restoration of funds.
- Support: Initial Spares- increased due to higher Aerospace Vehicle Equipment (AVE) cost estimates. Peculiar Support Equipment-Cost decreased due to contractor decision to modify (rather than procure) less support equipment at a lower cost. Other Weapons Systems- Cost increased due to more detailed logistical support analysis of optimal trainer requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) EDT&E		
Revised escalation indices. (Economic)	N/A	-10.4
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Adjustment for Current and Prior Inflation. (Estimating)	+4.9	+5.4
Budget adjustments to reflect revised inflation indices. (Estimating)	-10.5	-11.8
Adjustment to program estimate due to reprogramming. (Estimating)	+0.4	+0.4
EDT&E Subtotal	-5.2	-16.2
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-88.9

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13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Guidance hardware change to reduce weapon system life cycle costs. (Engineering)	+15.4	+18.9
Budget adjustment reflecting changes to inflation indices. (Estimating)	+11.6	+13.7
Procurement Subtotal	+27.0	-56.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Rcon	Qty	Sch	Eng	Est	Other	Spt	Total	
2.510	-0.013	-0.001	0.207	-0.011	0.042	--	-0.025	0.199	2.709

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) MMIII GRP - Electronics:
Rockwell International, Anaheim, CA
FO4704-93-C-0020, CPAP
Award: August 31, 1993
Definitized: August 31, 1993

Target	Initial Contract Price	
	Ceiling	Qty
\$253.2	N/A	0

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$326.5	N/A	0	\$350.7	\$350.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-4.5	\$-2.4
Cumulative Variances To Date (01/31/96)	\$-8.4	\$-2.9
Net Change	\$-3.9	\$-0.5

Explanation of Change:

The net change of \$-3.9M in cost variance is due to the additional effort to design the Operational Model (OM) circuit module. There was additional effort required to redesign the OM Missile Guidance Set Control (MGSC). The material costs in the Guidance Replacement Program (GRP) Data Acquisition System (GDAS) were higher than

15. (U) Contract Information (Cont'd):

planned. There was additional effort required to checkout the Guided Missile Set Control Test Station (GMSCTS) engineering module (EM).

The net change of \$-0.5M in schedule variance is due to slow progress in the Missile Guidance Control (MGC) area due to module rework.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 36.4% (4 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 19.3% (\$341.1 / \$1766.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY93-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2003)	Total
EDT&E	231.2	109.9	108.2	44.4	493.7
Procurement	-	-	62.0	1210.6	1272.6
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	231.2	109.9	170.2	1255.0	1766.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1993				52.8	53.7	53.7	53.6	2.7
1994				81.6	84.5	84.5	84.1	2.0
1995				88.1	93.0	92.9	78.4	1.9

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1996				101.9	109.9	61.7	4.2	2.0
1997				98.1	108.2			2.2
1998				39.4	44.4			2.3
Subtot				461.9	493.7	292.8	220.3	

Expenditures and obligations reflect program records as of 29 Feb 96.

Appropriation: 3020 Missile Procurement, Air Force

1996								2.1
1997	14	24.7	26.6	55.2	62.0			2.2
1998	76	35.3	108.8	167.0	191.7			2.2
1999	178	33.9	226.5	278.4	326.6			2.3
2000	192	38.0	230.5	281.6	337.6			2.2
2001	192	35.9	222.0	270.5	331.6			2.2
2002		14.8		14.8	18.5			2.2
2003		3.6		3.6	4.6			2.2
Subtot	652	186.2	814.4	1071.1	1272.6			
Grand Total	652	186.2	814.4	1533.0	1766.3	292.8	220.3	

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17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The concept of operations is based on 500 deployed guidance systems which operate continuously. This is a modification to the current guidance system. As such Operating and Support (O&S) costs are not new. Calculations are based on historical guidance repair data, which has varied little since Minuteman III was fielded in the early 1970s. Personnel costs are based on the current manning levels associated with guidance system repair. These levels will not change because maintenance personnel have multiple tasks and qualifications that drive overall manning requirements. Repair costs are calculated as the number of projected annual repairs, multiplied by the unit repair cost. Unit level consumption costs are based on costs associated with deployment of missile wing personnel to missile sites to remove and replace guidance systems, and the annual user costs associated with maintaining guidance related maintenance support equipment. Repair and unit level consumption costs will decrease as a result of this modification. The increase in reliability of the electronics will result in fewer guidance system repairs and fewer maintenance actions by field personnel. NOTE: The calculated costs to repair the guidance set compares system level Missile Guidance System (MGS) repair. O&S data was extracted from the routine program office estimate dated Aug 95.

b. (U) Costs -- (FY 1993 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Year-Antecedent System	Avg Annual Cost Per Year-Current System
Personnel	3.5	3.5
Repair Costs	16.8	24.4
Unit Level Consumption	4.1	4.5
Total	24.4	32.4

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18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	---	432.4	432.4
Total	---	---	---	432.4	432.4

Contractor support costs reflect those sustaining engineering costs that are associated with support of the Missile Guidance System (MGS) to the year 2020. Costs also include the effort estimated to be required for software changes to associated guidance depot support equipment. Estimates assume O&S costs will not occur until the Guidance Replacement Program (GRP) deploys assets in FY98.

AF-9 JDAM

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: JDAM

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Joint Direct Attack Munition (JDAM)

2. DoD Component: USAF

Joint Participants:
USAF, Navy

3. Responsible Office and Telephone Number:

ASC OL/YU	GM-15 OSCAR L. SOLER
Joint Direct Attack Munition	Assigned: January 2, 1996
102 West D Ave Suite 168	AV 872-3526 COMM 904-882-3526
Eglin AFB, FL 32542-6807	

4. Program Elements/Procurement Line Items:

RDT&E:
 PE 0604618F (Shared) JDAM and PIP
 PE 0604618N (Shared) JDAM and PIP

PROCUREMENT:
 APPN 3020 ICN JDAM00 (Air Force)
 APPN 1507 ICN 0550 (Navy)

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP).

SAF/PAS

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (DASB-PA)
DEPARTMENT OF DEFENSE

JDAM, December 31, 1995

4. Program Elements/Procurement Line Items (Cont'd):

Procurement includes 0207583F (3020) and Appropriation 1507N, ICN 0550. Air Force and Navy Procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 but not Joint Programmable Fuse.

5. Related Programs:

Joint Programmable Fuse (JPF), Joint Stand-Off Weapon (JSOW), Joint Air-to-Surface Standoff Missile (JASSM), Wind Corrected Munitions Dispenser (WCMD), DSU-33 (Air Force Only), B-1B, B-2, FA-18C/D, F-22A, F-16C/D, F-15E, B-52H, F-117A, F-14A/B/D, FA-18E/F, P-3, S-3, and AV-8B.

6. Mission and Description:

The Air Force and Navy do not intend for the Joint Direct Attack Munition (JDAM) to replace any existing weapon system. Operation DESERT STORM confirmed the need for a more accurate weapon delivery capability in adverse weather conditions and from medium/high altitudes. Failure to satisfy this requirement will allow the enemy to continue to take advantage of the sanctuary of weather and/or prevent United States air power from prosecuting a conflict on its terms. The JDAM is an Air Force and Navy munitions program to correct these shortfalls, with the Air Force as the Executive Service. JDAM will upgrade the existing general purpose bombs (MK-84, BLU-109/B, and MK-83/BLU-110) by integrating them with a tail guidance kit consisting of an Inertial Navigation System (INS) aided by a Global Positioning System (GPS). JDAM will provide an accurate (13 meters) adverse weather capability. The primary platforms for the JDAM development are the B-1B, B-2, B-52H, FA-18C/D and the F-22A (for the MK-83/BLU-110 only). The services will certify other aircraft (e.g. F-16C/D, F-14D, F-15E, FA-18E/F, S-3, P-3, AV-8B) to deliver JDAM when funding becomes available. The JDAM Product Improvement Program (PIP) will field improvements to the JDAM system.

7. Program Highlights:

a. Significant Historical Developments --

The Joint Requirements Oversight Council (JROC) approved the Mission Need Statement (TAF-401-91) on 5 March 1992. A Milestone (MS) 0 Defense Acquisition Board (DAB) met on 8 June 1992 and directed planning for the basic Joint Direct Attack Munition (JDAM) program for a MS I/II DAB review and directed JDAM 3 planning for MS I. A modified MS I DAB review was successfully completed 1 October 1993. JDAM 3 was redesignated as a Product Improvement Program (PIP) in November 1993 to concurrently conduct risk reduction efforts toward providing a precision capability to the basic JDAM. The MS I Acquisition Decision Memorandum (ADM) was signed 1 December 1993.

JDAM, December 31, 1995

7a. Program Highlights (Cont'd):

The JDAM Engineering and Manufacturing Development (EMD) Phase I contracts were awarded 11 April 1994 to Martin Marietta and McDonnell Douglas.

JDAM initiated the Exploitation of Differential GPS Guidance Enhancement (EDGE) program in June 1994 to demonstrate the potential of wide area differential Global Positioning System (GPS) as a way to improve JDAM's accuracy. The demonstration program was successful.

The Federal Acquisition Streamlining Act (FASTA) of October 1994 designated the JDAM program as a Defense Acquisition Pilot Program. DUSD(AR) selected the JDAM program to implement pay-for-performance as a pilot project in accordance with FASTA.

In July 1995, USD(A&T) approved an acceleration of the JDAM Baseline program.

USD(A&T) signed the Milestone I JDAM Acquisition Program Baseline (APB) and Acquisition Strategy Report (ASR) on 11 July 1995.

The Joint Operational Requirements Document (ORD) was updated and signed on 23 August 1995 and the Joint Requirements Oversight Council (JROC) validated the Key Performance Parameters (KPP) on 30 August 1995.

Milestone II approval was provided at the Defense Acquisition Board (DAB) Readiness Review on 6 September 1995 --JDAM's Single Acquisition Management Plan (SAMP) was adopted. The Milestone II Acquisition Decision Memorandum (ADM) was signed on 20 September 1995.

Milestone I for the JDAM Product Improvement Program (PIP) slipped more than six months, from April 1998 to September 1999, due to the revised schedule in the Acquisition Program Baseline (APB) approved by USD(A&T) on 20 September 1995.

b. Significant Developments Since Last Report --

The Acquisition Decision Memorandum (ADM) signed 20 September 1995 allowed the Air Force and Navy to buy the maximum number of kits supported by the authorized and appropriated budget.

On 11 October 1995, an Engineering and Manufacturing Development (EMD) Phase II contract option was awarded to McDonnell Douglas. The Average Unit Procurement Price (AUPP) objective for 40,000 units proposed by the contractor was \$13,847 (FY93\$), substantially lower than the \$40,000 (FY91\$) or \$42,240 (FY93\$) cost goal in the Joint

JDAM, December 31, 1995

7b. Program Highlights (Cont'd):

Operational Requirements Document (ORD). The program is proceeding well.

This will be our final report on the Martin Marietta and McDonnell Douglas JDAM Engineering and Manufacturing Development (EMD) Phase I contracts since they are more than 90 percent complete.

Program funding for adapting terminal seeker technologies was deleted from the Product Improvement Program (PIP) during the FY97 budget cycle. Adapting seekers for terminal guidance is the only known technical approach for achieving 3 meter Circular Error Probability (CEP). The PIP Milestone I scheduled in the Acquisition Program Baseline (APB) for September 1999 was to approve further seeker development. The programmatic change in PIP funding will necessarily delay or entirely defer this milestone.

Engineering and Manufacturing Development (EMD) testing for baseline JDAM is on track. The contractor has started delivering JDAM Separation Test Vehicles which the Air Force and Navy are using to conduct ground, captive, and separation testing on the B-1B, B-2, and FA-18C/D. The contractor has also delivered Weapons Simulators to the B-2, B-1B, and F-16C/D. These are currently being integrated into the aircraft Software Integration Laboratories.

The program is expected to satisfy all mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There is a schedule and performance breach to the approved Defense Acquisition Executive (DAE) Acquisition Program Baseline (APB) dated 20 September 1995, but no Rynn-McCurdy unit cost breaches.

The JDAM Product Improvement Program (PIP) funding for adapting terminal seekers was deleted during the FY97 budget cycle. While baseline improvements to the Global Positioning System (GPS) receiver, target location errors and guidance system will improve JDAM accuracy, terminal seekers are the only known technical approach to achieving a 3 meter Circular Error Probability (CEP). A 3 meter CEP is a Key Performance Parameter (KPP) for the PIP. This programmatic change in PIP funding will necessarily delay or defer entirely the Milestone I date of September 1999. The PIP Milestone I date is an Acquisition Program Baseline (APB) milestone.

A program deviation report was submitted to AFPEO/WP February 1996. Resolution of the PIP 3 meter Key Performance Parameter (KPP) will be pursued through the joint requirements process and a baseline change

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8. Threshold Breaches (Cont'd):

request will be submitted when the process is complete.

9. Schedule:

a. Milestones --

	Planning Estimate	Approved Program;DE	Current Estimate
Milestone 0	JUN 92	JUN 92	JUN 92
Milestone I	OCT 93	OCT 93	OCT 93
Dem/Val Contract Award	APR 94	APR 94	APR 94
Critical Design Review Complete	AUG 95	AUG 95	AUG 95
Production Readiness Review #1	SEP 95	N/A	N/A (Ch-1)
Milestone II	OCT 95	SEP 95	SEP 95
Exercise EMD Contract Option	OCT 95	OCT 95	OCT 95
DT&E/TECHEVAL			
Start (Flight Tests)	OCT 95	OCT 95	DEC 95 (Ch-2)
Complete (2000 lb Kit)	FEB 98	DEC 97	OCT 97 (Ch-2)
Complete (1000 lb Kit)	JUL 98	N/A	JUL 98 (Ch-3)
Complete (1000 lb Kit) - Weapon Only	N/A	FEB 98	FEB 98 (Ch-4)
Operational Assessment			
Start	MAY 96	OCT 95	OCT 95
Complete	APR 97	MAR 97	MAR 97 (Ch-5)
First Guided Flight	JUN 96	N/A	N/A (Ch-1)
IOT&E/OPEVAL			
IOT&E/OPEVAL (Dedicated)			
Start	APR 97	SEP 97	SEP 97 (Ch-6)
Complete (2000 lb Kit)	FEB 99	DEC 97	DEC 97 (Ch-2)
OT&E/OPEVAL			
Complete (1000 lb Kit/F-22)	SEP 01	MAY 01	MAY 01 (Ch-7)
Production Readiness Review #2	JUL 97	N/A	N/A (Ch-1)
Exercise LRIP-1 Option	OCT 97	N/A	OCT 97 (Ch-1)
Exercise Lot 1 Option	N/A	APR 97	APR 97 (Ch-2)
Organizational Organic Support Capability	APR 98	N/A	APR 98 (Ch-8)
LRIP-2 Contract Award	OCT 98	N/A	OCT 98 (Ch-1)
Exercise Lot 2 Option (FRP)	N/A	APR 98	APR 98 (Ch-2)
LRIP-1 Production First Delivery	JAN 99	N/A	JAN 99 (Ch-1)
Lot 1 Production First Delivery	N/A	APR 98	MAY 98 (Ch-2)
AOR Depot Support Capability	APR 99	N/A	JAN 99 (Ch-9)
Milestone III	JUL 99	N/A	JUL 99 (Ch-1)
Milestone III (2000 Lb)/LRIP (1000 Lb)	N/A	APR 98	APR 98 (Ch-2)
Required Assets Availability (AF)	N/A	MAR 99	MAR 99 (Ch-11)
Initial Operational Capability (FA-18)	SEP 99	SEP 99	SEP 99 (Ch-13)
Full Rate Production Contract Award	OCT 99	N/A	OCT 99 (Ch-14)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program;DE	Current Estimate
Milestone III (1000 Lb on F-22)	N/A	SEP 01	SEP 01 (Ch-2)
Component Depot Support Capability	APR 00	N/A	APR 00 (Ch-9)
Milestone I JDAM PIP	N/A	SEP 99	N/A (Ch-15)

ACRONYMS: AUR - All Up Round
 LRIP - Low Rate Initial Production
 RAA - Required Assets Availability

b. Previous Change Explanations --

Required Assets Availability (RAA) and Milestone I JDAM PIP milestones were added and are considered to be significant milestones by the program office.

Milestone II date changed from October 1995 to September 1995 to reflect the actual date of the Milestone II Program Review.

Milestone I - JDAM PIP slipped by more than six months from April 1998 to September 1999 due to the revised schedule approved by USD(A&T) on 20 September 1995.

c. Current Change Explanations --

(Ch-1) The following milestones were deleted in the Milestone II Acquisition Program Baseline (APB) dated 20 September 1995 and will not be carried forward as part of the Development Estimate. They are reflected here for transitional purposes only and will not be shown in future SARs.

- Production Readiness Review #1, First Guided Flight, Production Readiness Review #2, Exercise LRIP-1 Option, LRIP-2 Contract Award, LRIP-1 Production First Delivery, and Milestone III were deleted.

(Ch-2) The following milestones and dates were changed/added to reflect the approved accelerated JDAM program and the approved Acquisition Program Baseline (APB) dated 20 September 1995 that supports the Milestone II Defense Acquisition Board (DAB).

- DT&E/TECHEVAL Start (Flight Tests) changed from October 1995 to December 1995. DT&E/TECHEVAL started in October 1995 and flight tests started in December 1995. DT&E/TECHEVAL Complete (2000 lb Kit) changed from May 1998 to October 1997. IOT&E/OPEVAL Complete (2000 lb Kit) changed from February 1999 to December 1997. Exercise Lot 1

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9c. Schedule (Cont'd):

Option, Exercise Lot 2 Option (FRP), Lot 1 Production First Delivery, Milestone III (2000 Lb)/LRIP (1000 Lb), and Milestone III (1000 Lb on F-22) were added.

(Ch-3) DT&E/TECHEVAL Complete (1000 lb Kit) was deleted because the F-22A was not available to support as a threshold aircraft. This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not be carried forward as part of the Development Estimate.

(Ch-4) DT&E/TECHEVAL Complete (1000 lb Kit) - Weapon Only was added to reflect DT&E/TECHEVAL for 1000 lb Kit on F-16C/D.

(Ch-5) Operational Assessment Complete changed from June 1997 to March 1997 to support accelerated Lot 1 Production go-ahead decision.

(Ch-6) IOT&E/OPEVAL Start changed from April 1997 to September 1997 due to a change in the threshold bomber from B-1B to B-52H, and increased combined DT&E/OT&E program.

(Ch-7) OT&E/OPEVAL Complete (1000 lb Kit/F-22) changed from September 2001 to May 2001 to reflect updated schedule from F-22A SPO.

(Ch-8) Organisational Organic Support Capability was deleted because it is not required at the organizational level (O-level) except for assembly and Built-In-Test (BIT)/Reprogramming with Common Munition Built-In-Test and Reprogramming Equipment (CMBRE) or Common Field Memory Reprogramming Equipment (CFMRE). This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not be carried forward as part of the Development Estimate.

(Ch-9) The following milestone requirements were deleted due to the 20 year warranty. The 20 year extended maintenance repair warranty begins with Lot 1 and will cover any repairs required. This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not be carried forward as part of the Development Estimate.

- AUR Depot Support Capability was deleted.
- Component Depot Support Capability requirement was deleted.

(Ch-10) Required Assets Availability (RAA) was deleted because RAA is only applicable to the Air Force. This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not

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9c. Schedule (Cont'd):

be carried forward as part of the Development Estimate.

(Ch-11) Required Assets Availability (AF) was added to reflect the Operational Requirements Document (ORD) and accelerated program.

(Ch-12) Initial Operational Capability (IOC) was deleted because only the Navy has specified an IOC. This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not be carried forward as part of the Development Estimate.

(Ch-13) Initial Operational Capability (FA-18) was added to reflect the Operational Requirements Document (ORD).

(Ch-14) Full Rate Production Contract Award was deleted because the current RMD contract has Full Rate Production (Lot 2) as an option. This milestone is not included in the Milestone II Acquisition Program Baseline (APB) and will not be carried forward as part of the Development Estimate.

(Ch-15) Milestone I JDAM PIP was changed from the September 1999 to N/A. The Milestone I JDAM PIP was a decision point for further development of terminal seekers. Terminal seeker development was deleted during the FY97 budget cycle. This is a fact-of-life schedule breach.

d. References --

Planning Estimate:

FY95 President's Budget (PB) dated February 7, 1994.

Approved Program;DE:

Approved Acquisition Program Baseline dated September 20, 1995.

10. Performance Characteristics:

a. Performance --	PE	Approved Program;DE Objective/Threshold	Demonstrated Perf	Current Estimate
Weather Capability Accuracy (CEP) (Meters)	Adverse	Adverse / Adverse	TBD	Adverse
With GPS, Impact Angles > 60 Deg	13	N/A / N/A	TBD	13 (Ch-1) Against Horizontal Targets

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10a. Performance Characteristics (Cont'd):

	PR	Approved Program;DE Objective/Threshold		Demonstrated Perf	Current Estimate	
GPS Available, Impact Angles > 60 Deg	N/A	13	/ 13	TBD	13	(Ch-1)
		Horizon- tal Targets	Horizon- tal Targets		Horizon- tal Targets	
Inflight Re-targeting Capability (captive carry)	Yes	Yes	/ Yes	TBD	Yes	
Carrier Operability	Yes	Yes	/ Yes	TBD	Yes	
Warhead Compatibility	MK-84, BLU-109, MK-83	MK-82, MK-83	/ BLU-109, MK-84, MK-83 (F-22)	TBD	BLU-109, MK-84, MK-83 (F-22)	(Ch-2)
Aircraft Compatibility						
Bomber	B-1B, B-2	B-1B, B-2	/ B-52H	TBD	B-52H	(Ch-2)
Fighter Attack	F-22, F/A-18C/ D	FA-18 C/D (MK-83), F-16 C/D, FA-18 E/F, F-117A, F-15E, P-3, S-3, F-14 A/B/D	/ FA-18C/ D, F-22A, AV-8B	TBD	FA-18C/ D, F-22A, AV-8B	(Ch-2)
Mission Reliability	N/A	.90	/ .90	TBD	.90	(Ch-3)
JDAM PIP Accuracy (CEP) (Meters)	3	3	/ 3	TBD	8	(Ch-4)
JDAM PIP Weather Capability	N/A	Adverse	/ Adverse	TBD	Adverse	(Ch-5)
JDAM PIP Warhead Compatibility	MK-84, BLU-109	MK-82, MK-83	/ BLU-109, MK-84	TBD	BLU-109, MK-84	

1/ Adverse weather is defined as natural/man-made conditions such as rain, haze, dust, smoke, fog, snow, ice, wind, and/or clouds that preclude the use of current inventory precision guided munitions.

2/ Assumes GPS quality hand-off from aircraft. In addition, the target location error (TLE) portion of the total system error is allocated to be 7.2 meters CEP. If TLE is larger than 7.2 meters

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10a. Performance Characteristics (Cont'd):

CEP, the total system CEP will increase accordingly. For impact angles between 60 degrees and 35 degrees (with GPS available) accuracy degradation up to 19 meters CEP against horizontal targets is an objective.

3/ Inflight programming/targeting will be possible through MIL-STD-1553/1760 data bus interface to the weapon from existing aircraft stores management hardware and modified software.

4/ JDAM will be capable of operation on aircraft carriers to include withstanding 25 aircraft carrier catapult launches and arrested landings, and operating within the carriers electromagnetic environments.

5/ Physical compatibility with the B-1B, B-2, FA-18C/D, AV-8B and B-52H were successfully demonstrated during actual fit test in EMD Phase 1. F-22A physical compatibility was also demonstrated using computerized physical fit analysis during this phase. Integration with the F-15E, F-16C/D, F-117, FA-18E/F, F-14D, S-3, and P-3 will be addressed as follow-on integration efforts. The A-6E aircraft was deleted by Chief of Naval Operations (CNO) Letter, Serial Number W880D5/4UG59112, dated 2 February 1994. The F-111F has been deleted (Reference AF/XOR Message 260111Z January 1994).

6/ F-22 compatibility will be limited to internal carriage of the MK-83/BLU-110 configuration. The AV-8B is an unfunded, non-key performance parameter, threshold aircraft.

7/ Mission reliability commences when the aircrew accepts the loaded aircraft and ends at weapon impact. Mission reliability for the guidance kits does not include reliability for the fuse. Mission reliability, a component of Guidance Kit system reliability, is used because the other component of system reliability (10 year storage reliability) cannot be demonstrated during development and operational testing.

ACRONYMS: CEP - Circular Error Probable
DEG - Degree
GPS - Global Positioning System
MSL - Mean Sea Level
PIP - Product Improvement Program
TBD - To Be Determined

b. Previous Change Explanations -- None.

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10c. Performance Characteristics (Cont'd):

c. Current Change Explanations --

(Ch-1) The following performance characteristics were deleted/added from the planning estimate to the development estimate to take into account short duration time-of-flight where JDAM may not acquire Global Positioning System (GPS) satellites even when GPS is available.

- Accuracy (CEP) (Meters) With and Without GPS, Impact Angles > 60 Deg was deleted. This item is shown for transitional purposes only and will be deleted in the next SAR.

- Accuracy (CEP) (Meters) GPS Available, Impact Angles > 60 Deg was added.

(Ch-2) The following performance characteristics were changed to reflect the new Operational Requirements Document (ORD).

- Warhead Compatibility was changed from BLU-109, MK-84, MK-83 (F-22 Only) to BLU-109, MK-84, MK-83 (F-22) because the ORD identified AV-8B as a threshold for MK-83/BLU-110 as well.

- Aircraft Compatibility Bomber was changed from B-1B, B-2 to B-52H to reflect new ORD direction and accelerated program. B-1B and B-2 integration schedules remain unchanged.

- Aircraft Compatibility Fighter Attack was changed from FA-18C/D, F-22 (MK-83 Only) to FA-18C/D, F-22A, AV-8B because the ORD identified AV-8B as a threshold for MK-83/BLU-110 as well.

(Ch-3) Mission Reliability was added. It is a threshold characteristic in the Joint Operational Requirements Document (ORD) and considered a Key Performance Parameter (KPP).

(Ch-4) JDAM PIP Accuracy (CEP) (Meters) was changed from 3 to 8. The PM's current estimate reflects CEP improvements to the baseline JDAM through implementation of the remaining Product Improvement Program developments - improved GPS receiver, reductions in target location error and guidance system improvements. FY97 budget cycle decisions deleted funding for terminal seekers.

(Ch-5) JDAM PIP Weather Capability was added from the planning estimate to the development estimate to clarify JDAM as an adverse weather capable weapon and to maintain that capability when adding Product Improvement Program (PIP).

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10d. Performance Characteristics (Cont'd):

d. References --

Planning Estimate:

JDAM Joint Operational Requirements Document dated May 13, 1993.

Approved Program;DE:

Approved Acquisition Program Baseline dated September 20, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Planning Estimate	Approved Program;DE	Current Estimate
Development (RDT&E)	640.5	490.3	486.7
Procurement	0.0	2090.6	1612.1
Hardware			(1323.4)
Tooling and Test Equipment			(1.2)
System Engineering/Program Mgn			(15.5)
Containers			(26.7)
Warranty			(4.7)
Engineering Change Orders			(40.2)
Non-Recurring			(42.9)
Total Flyaway	(0.0)		(1454.6)
Warhead			(49.1)
Product Support Cost			(87.3)
Total Other Wpn Sys	(0.0)		(136.4)
Peculiar Support	(0.0)		(21.1)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	640.5	2580.9	2098.8
Escalation	41.0	811.4	371.8
Development (RDT&E)	(41.0)	(27.0)	(19.5)
Procurement	(0.0)	(784.4)	(352.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	681.5	3392.3	2470.6

NOTE: The Planning Estimate has been escalated from BY93 to BY95 using a factor of 1.048 based on Office of the Secretary of Defense (OSD) RDT&E (3600) rates dated January 1995. This change was required for consistency with the Milestone II Acquisition Program Baseline (APB).

NOTE: This baseline does not include funding for the Joint Programmable Fuse (\$5.7M TY\$ for RDT&E) (\$87.0M TY\$ for

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11a. Total Program Cost and Quantity (Cont'd):
Procurement).

This Acquisition Program Baseline (APB) includes JDAM PEs 0604618F and 0604618N for Research, Development, Test and Evaluation (RDT&E), and 0207583F (3020) and Appropriation 1507N, ICN 0550, for Procurement.

Air Force and Navy RDT&E funding includes the Product Improvement Program (PIP). Air Force and Navy Procurement funding does not include PIP funding. Navy Procurement funding includes BLU-109 but not Joint Programmable Fuse.

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	Planning Estimate	Approved Program;DE	Current Estimate
b. Quantity --			
Development (RDT&E)	378	630	630
Procurement	0	87496	87496
Total	378	88126	88126

Note: Excludes 194 RDT&E prototypes from the SAR Baseline and 81 from the Current Estimate that are not considered fully configured.

The total number of non-fully configured prototypes for the current estimate decreased from 126 to 81 units for two reasons. First, the Joint Program Office (JPO) refined asset requirements with all platforms that would fully support either Martin Marietta or McDonnell Douglas, depending on downselect. This caused an overall decrease from 126 to 95 units. Second, McDonnell Douglas won the downselect which effected another decrease from 95 to 81 units based on their design's physical similarity to a MK-84 tail kit.

NOTE: The Low Rate Initial Production (LRIP) quantities approved in the Acquisition Decision Memorandum (ADM) at Milestone II were 425 (1st year) units. Subsequent FY97 budget cycle decisions approved a buy-to-budget approach for determining annual quantities. With the lower than expected unit costs, LRIP quantities will be 937.

c. Foreign Military Sales/International Cooperative Programs --
To be determined.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
FY95 President's Budget (PB) dated February 7, 1994.

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11e. Total Program Cost and Quantity (Cont'd):

Approved Program;DE:
Approved Acquisition Program Baseline dated September 20, 1995.

12. Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. Total Program			
(1) Cost (BY95\$)	2098.8	2714.4	
(2) Quantity	88126	88126	
(3) Unit Cost	0.024	0.031	-22.68
b. Procurement			
(1) Cost (BY95\$)	1612.1	2090.6	
(2) Quantity	87496	87496	
(3) Unit Cost	0.018	0.024	-22.89

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	681.5	0.0	0.0	681.5
Previous Changes:				
Economic	-3.1	-	-	-3.1
Quantity	+17.1	-	-	+17.1
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+168.1	-	-	+168.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+182.1	-	-	+182.1
Current Changes:				
Economic	-6.0	-128.0	-	-134.0
Quantity	-	-	-	-
Schedule	-	-8.3	-	-8.3
Engineering	-	-	-	-
Estimating	-351.4	-743.2	-	-1094.6
Other	-	-	-	-
Support	-	-31.0	-	-31.0
Subtotal	-357.4	-910.5	-	-1267.9
Total Changes	-175.3	-910.5	-	-1085.8
Adjustments	-	+2874.9	-	+2874.9
Current Estimate	506.2	1964.4	-	2470.6

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	EDT&E	PROC	MILCON	TOTAL
Planning Estimate	640.5	0.0	0.0	640.5
Previous Changes:				
Quantity	+16.0	-	-	+16.0
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+102.6	-	-	+102.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+118.6	-	-	+118.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-6.9	-	-6.9
Engineering	-	-	-	-
Estimating	-272.4	-462.3	-	-734.7
Other	-	-	-	-
Support	-	-9.5	-	-9.5
Subtotal	-272.4	-478.7	-	-751.1
Total Changes	-153.8	-478.7	-	-632.5
Adjustments	-	+2090.8	-	+2090.8
Current Estimate	486.7	1612.1	-	2098.8

NOTE: Planning estimate and previous changes for EDT&E have been escalated from BY93 to BY95 using a factor of 1.048 based on Office of the Secretary of Defense (OSD) 3600 rates dated January 1995.

NOTE: Adjustment adds Acquisition Program Baseline (APB) Procurement funding as required after Milestone II approval.

ACRONYMS: BSO - Budget Submission Office
 BTR - Budget Transfer Reduction
 DBOF - Defense Business Operations Fund
 JPF - Joint Programmable Fuse

b. Previous Change Explanations --

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13b. Cost Variance Analysis (Cont'd):

RDT&E

Economic: Revised escalation indices.
Quantity: Increased Air Force procurement of 150 additional assets for interim capability. Quantities increased from 533 to 630 to support the required Captive Carriage Reliability Program/Margin Testing and for Integrated System Evaluation on the F-16C/D to support Low Rate Initial Production (LRIP).
Estimating: Adjusted for Current and Prior Inflation. Funding increased due to inclusion of Air Force funding for follow-on PIP efforts beyond PIP MS I in FY99 (FY00-FY12). Costs decreased due to redefining the Air Force PIP in FY93-FY99. Navy funding decreased due to Small Business Innovative Research (SBIR) and revised Navy cost estimate. Navy Congressional reductions for Defense Business Operations Fund (DBOF) Assessments. Revised estimate due to change in unit cost.

c. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-30.9
Economic adjustment for negative program change. (Economic)	N/A	+24.9
Adjustment for Current and Prior Inflation (Navy). (Estimating)	+0.6	+0.6
Navy funds increased due to additional AV-8B support requirements. (Estimating)	+10.0	+11.0
Revised estimate due to downselect of EMD Phase I contractors. (Estimating)	-2.6	-2.8
Navy funds decreased due to Defense Business Operations Fund (DBOF) and NAVCOMPT adjustments. (Estimating)	-2.8	-3.0
Adjustment for Current and Prior Inflation (Air Force). (Estimating)	+1.6	+1.8
Product Improvement Program (PIP) funding eliminated in FY97 President's Budget. (Estimating)	-230.2	-303.2
Zero Base Transfer from RDT&E to production. (Estimating)	-24.5	-27.9

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Adjustment to match Air Force Cost Analysis Improvement Group (CAIG). (Estimating)	-5.2	-6.0
Congressional reprogramming/withholding of funds. (Estimating)	-7.9	-8.7
Reduction in FY98 due to JDAM acceleration. (Estimating)	-9.6	-11.2
Reduction due to Small Business Innovative Research (SBIR). (Estimating)	-1.8	-2.0
RDT&E Subtotal	-272.4	-357.4
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-195.3
Economic adjustment for negative program change. (Economic)	N/A	+67.3
Revision of annual procurement buy profile for the Navy. (Schedule)	+0.2	-0.3
Revision of annual procurement buy profile for the Air Force. (Schedule)	-7.1	-8.0
Revised estimate due to decrease in unit cost and buy to budget profile for the Navy. (Estimating)	-113.8	-230.1
Revised estimate due to decrease in non-recurring cost for the Navy. (Estimating)	-15.8	-28.7
Revised estimate due to decrease in unit cost caused by Air Force direction to buy quantity according to the budget profile. (Estimating)	-338.0	-491.2
Revised estimate due to increase in non-recurring cost for the Air Force. (Estimating)	+5.3	+6.8
Revised estimate for peculiar support equipment for the Navy. (Support)	+5.7	+6.9
Reduction in support costs for the Navy. (Support)	-22.0	-43.9
Revised estimate for peculiar support equipment for the Air Force. (Support)	+15.4	+17.7
Reduction in support costs for the Air Force. (Support)	-8.6	-11.7
Procurement Subtotal	-478.7	-910.5

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.803	-0.002	-1.762	--	--	-0.011	--	--	-1.775	0.028

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

JDAM: Martin Marietta Corp, Orlando, FL F08626-94-C-0002, CPFF Award: April 11, 1994 Definitized: April 11, 1994	Initial Contract Price		
	Target	Ceiling	Qty
	\$13.8	\$0.0	0

Current Contract Price	Estimated Price At Completion	
	Contractor	Program Manager
Target Ceiling Qty		
\$30.8 \$0.0 0	\$30.8	\$30.8

Previous Cumulative Variances	Cost Variance		Schedule Variance	
Cumulative Variances To Date (09/30/95)	\$0.0	\$0.0	\$0.0	\$0.0
Net Change	\$0.0	\$0.0	\$0.0	\$0.0

Explanation of Change: None.

NOTE: Contract cost performance information is, because of the competitive nature of Phase I, SOURCE SELECTION SENSITIVE. This information is provided to the Air Force Program Executive Office for Weapons (AFPEO/WP) and will be available on request.

The Air Force awarded the contract for the first 18 months effort to Martin Marietta on 11 April 1994. The contract was modified on 20 February 1995 to convert the Engineering and Manufacturing Development (EMD) Phase I Cost Plus Award Fee (CPAF) to a Cost Plus Fixed Fee (CPFF).

On 11 October 1995, Engineering and Manufacturing Development (EMD) Phase II contract option was awarded to McDonnell Douglas. Upon this award, Martin Marietta discontinued earned value accounting and reporting. Data reflects the last earned value report dated September 1995. During our termination discussions, Martin Marietta

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15. Contract Information (Cont'd):

is estimating zero cost and schedule variance. This will be our final report on the Martin Marietta JDAM EMD Phase I contract since the contract is more than 90 percent complete.

JDAM:			Initial Contract Price		
			Target	Ceiling	Qty
McDonnell Douglas Corp, St Louis, MO			\$35.0	\$0.0	0
F08626-94-C-0003, CPPF					
Award: April 11, 1994					
Definitized: April 11, 1994					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$46.3	\$0.0	0	\$46.3	\$46.3	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$0.0	\$0.0	
Cumulative Variances To Date (10/31/95)			\$0.0	\$0.0	
Net Change			\$0.0	\$0.0	

Explanation of Change: None.

NOTE: Contract cost performance information is, because of the competitive nature of Phase I, SOURCE SELECTION SENSITIVE. This information is provided to the Air Force Program Executive Office for Weapons (AFPEO/WP) and will be available on request.

The Air Force awarded the contract for the first 18 months effort to McDonnell Douglas on 11 April 1994. The contract was modified on 20 February 1995 to convert the Engineering and Manufacturing Development (EMD) Phase I CPAP to a CPPF.

On 11 October 1995, Engineering and Manufacturing Development (EMD) Phase II contract option was awarded to McDonnell Douglas. Data reflects the last earned value report dated October 1995. We project zero cost and schedule variance. This will be our final report on the McDonnell Douglas JDAM EMD Phase I contract since it is more than 90 percent complete.

JDAM:			Initial Contract Price		
			Target	Ceiling	Qty
McDonnell Douglas Corp, St Louis, MO			\$70.5	\$0.0	630
F08626-94-C-0003, CPAP					
Award: October 11, 1995					
Definitized: October 11, 1995					

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15. Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$70.5	\$0.0	630	\$70.5	\$86.4
			Cost Variance	Schedule Variance
Previous Cumulative Variances			\$0.0	\$0.0
Cumulative Variances To Date (01/31/96)			\$0.0	\$0.0
Net Change			\$0.0	\$0.0

Explanation of Change: None.

The Air Force awarded the Engineering and Manufacturing Development (EMD) Phase II contract option on 11 October 1995 to McDonnell Douglas. This is the first time this contract is reported in the Selected Acquisition Report (SAR). PM's estimate at completion incorporates the cost of efforts not included in the prime contractor's final proposal. These costs were identified by the Source Selection Evaluation Group and were recognized by the Source Selection Authority during source selection.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 28.6% (4 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 12.8% (\$316.9 / \$2470.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY93-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2006)	Total
RDT&E	203.0	113.9	72.0	117.3	506.2
Procurement	-	-	23.0	1941.4	1964.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	203.0	113.9	95.0	2058.7	2470.6

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16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		FY95 Dollars			Program	Obligated	Expended	
		Monrec	Rec					

Appropriation: 1319 Research, Development, Test + Eval, Navy

1993				23.8	23.2	22.9	22.0	2.3
1994				7.9	7.9	7.9	7.9	1.9
1995				22.7	23.0	22.2	16.9	1.9
1996				27.0	28.0	12.5	0.8	2.0
1997				31.6	33.4			2.2
1998				14.9	16.1			2.2
1999				10.7	11.8			2.3
2000				10.1	11.4			2.2
2001				12.3	14.2			2.2
Subtot	114			161.0	169.0	65.5	47.6	

The Joint Programmable Fuze (JPF) funding (\$5.7M TY\$) is not included in this Navy Funding Summary. JPF is not part of the JDAM program but is budgeted in the JDAM Navy EDT&E and Procurement PEs.

Expenditures and Obligations reflect program office records as of 31 January 1996.

Appropriation: 1507 Weapons Procurement, Navy

1998	668	5.5	11.4	32.4	35.9			2.2
1999	900	5.0	15.6	36.4	41.3			2.3

JDAM, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

2000	786	3.8	13.8	29.2	33.8			2.2
2001	642	3.7	11.5	23.9	28.3			2.2
2002	1409	3.7	22.9	33.5	40.5			2.2
2003	2335	3.8	36.7	41.8	51.7			2.2
2004	2685	3.8	41.1	46.4	58.7			2.2
2005	6492	4.0	97.6	104.1	134.5			2.2
2006	9579	4.3	141.9	153.3	202.4			2.2
Subtot	25496	37.6	392.5	501.0	627.1			
Navy	25610	37.6	392.5	662.0	796.1	65.5	47.6	

The Joint Programmable Fuse (JPF) funding (\$87.0M TY\$) is not included in this Navy Funding Summary. JPF is not part of the JDAM program but is budgeted in the JDAM Navy RDT&E and Procurement PEs.

Appropriation: 3600 Research, Development, Test + Eval, AF

1993				21.8	21.4	21.4	21.1	2.7
1994				62.1	61.9	61.7	60.6	2.0
1995				64.6	65.6	60.1	43.1	1.9
1996				82.8	85.9	27.7	2.7	2.0
1997				36.4	38.6			2.2

JDAM, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1998				32.0	34.7			2.3
1999				22.2	24.6			2.2
2000				1.3	1.5			2.2
2001				1.0	1.2			2.2
2002				1.5	1.8			2.2
Subtot	516			325.7	337.2	170.9	127.5	

Expenditures and Obligations reflect program office records as of 19 February 1996 for the Air Force.

Appropriation: 3020 Missile Procurement, Air Force

1997	937	0.8	15.8	21.3	23.0			2.2
1998	2696	1.3	46.1	55.7	61.5			2.3
1999	2676	0.4	46.6	55.5	62.7			2.2
2000	6410	1.1	113.3	125.3	144.6			2.2
2001	10202	1.7	183.4	198.8	234.4			2.2
2002	11591		189.1	202.4	243.9			2.2
2003	10665		168.0	177.8	219.0			2.2
2004	10315		158.6	168.0	211.5			2.2

JDAM, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2005	6508		98.3	106.3	136.7			2.2
Subtot	62000	5.3	1019.2	1111.1	1337.3			
USAF	62516	5.3	1019.2	1436.8	1674.5	170.9	127.5	
Grand Total	88126	42.9	1411.7	2098.8	2470.6	236.4	175.1	

17. Production Rate Data:

a. Deliveries to Date --

	Plan/Actual
RDT&E	36/37
Procurement	0/0

Contractually, 36 Separation Test Vehicles (STVs) were planned to be delivered by 31 December 1995. Engineering and Manufacturing Development (EMD) Phase I planned 10 STVs with 10 delivered. EMD Phase II planned 26 STVs with 27 delivered. In total, 36 STVs were planned with 37 delivered.

b. Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development Estimate	Current Estimate	Latest Approved Threshold
• Qty 87496 - • Peak Rate: 1083.0/mo			
FY 95 Base-Year \$	0.024	0.018	0.028
Then Year \$	0.033	0.023	0.038
• Qty 0 (1st three years) - • Peak Rate: 0.0/mo			
FY 95 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

The current estimate is based on buy-to-budget profile. The quantity remains at 87,496 units but the peak rate is 1,083 units

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17b. Production Rate Data (Cont'd):
per month.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Operating and Support costs were updated in November 1995 from the Defense Acquisition Board (DAB) position to reflect the increase in Navy quantities from 12,000 to 25,496 units.

The Air Force JDAM Operating and Support (O&S) cost estimate is based on the use of an O&S cost model named the Financial O&S Estimate (FINOSEST) developed by the Air Force Cost Center in Washington, D.C. The model was used for the MS I, MS II, and source selection deliberations to calculate the estimated O&S costs for the JDAM program. FINOSEST calculates the O&S costs based on the association between known variables and the JDAM design (labor rates, failure rates, time to assemble, transportation costs, etc.).

The following are the assumptions that were used in forming the Air Force O&S cost estimate: Total Air Force JDAM inventory of 62,000 units. JDAM will have a 20 year extended repair warranty to cover all repairs. Air Force will have two levels of maintenance; Organizational and Depot Level. The JDAM kit has a 20 year operating life. Air Force will conduct 50 drops a year of JDAM kits. The 50 drops a year will require Telemetry (TM) and Flight Termination Systems (FTS). 1/2% of the total JDAM failures will not be covered by the extended repair warranty. The extended repair warranty does not cover overseas transportation costs. Estimate does not take into account any Defense Business Operations Fund (DBOF) activities.

There is no antecedent system for the Air Force JDAM.

The cost drivers for the Air Force O&S cost estimate were Telemetry and Flight Termination Systems for the 50 yearly drops along with the Range Support costs for the drops.

The Navy O&S costs are based on the NAVAIR O&S cost model.

The following are the assumptions that were used in forming the Navy O&S cost estimate: Utilized Air-4.2.5 Air-Launched Missile Model. 12 carriers deployed per year. 350 JDAMs per carrier. 50 firings per year. 10% container failure rate per year. Contractual support identified for first two years of operations. 20 year operating life.

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18a. Operating and Support Costs (Cont'd):

The cost drivers for the Navy O&S cost estimate were Range Evaluation for practice bomb drops, Sustaining Engineering/Program Management, Transportation, and Organizational Maintenance Handling/Inspection.

There is no antecedent system for the Navy JDAM.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Total Cost for 87,496 JDAM Units	N/A
Consumable Material	2.7	N/A
TM/FTS	56.3	N/A
Range Support	45.3	N/A
Technical Data Management	0.2	N/A
Transportation	6.9	N/A
Non-Warranted Repair Cos	0.1	N/A
Mission Personnel	6.7	N/A
Sustaining Engineering	7.2	N/A
System & Inventory Manag	1.8	N/A
Contractor Support	0.6	N/A
AFMSS	14.4	N/A
Other	5.7	N/A
Total	147.9	N/A

Operating and Support Costs include both Air Force and Navy dollars.

The Other category includes Integrated Logistics Support (ILS) functions such as quality surveillance and Naval Weapon Systems (NWS) handling/processing costs.

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19c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Contractor Support	---	---	---	0.6	0.6
Total	---	---	---	0.6	0.6

Contractor support costs for the Navy will begin in FY98 and continue for the first two years of operation. The Navy will use the contractor support as "tech rep" support for any Navy unique requirements at the Naval Weapon Stations and aboard the aircraft carriers.

Based on the 20 year extended repair warranty, the Air Force does not have a requirement for contractor support. The 20 year extended maintenance repair warranty begins with Lot 1 and will cover any repairs required.

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Contractor Support	---	---	---	0.6	0.6
Total	---	---	---	0.6	0.6

Contractor support costs for the Navy will begin in FY98 and continue for the first two years of operation. The Navy will use the contractor support as "tech rep" support for any Navy unique requirements at the Naval Weapon Stations and aboard the aircraft carriers.

Based on the 20 year extended repair warranty, the Air Force does not have a requirement for contractor support. The 20 year extended maintenance repair warranty begins with Lot 1 and will cover any repairs required.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: UHF FOLLOW-ON

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

UHF Follow-on Communications Satellite System

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PEO for Space, Comms & Sensors	CAPT James W. Loiselle
Communications Satellite Program	Assigned: January 21, 1996
2451 Crystal Drive	AV 332-2879 COMM (703)-602-2879
Arlington, VA 22245-5200	

4. Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 1507 ICN 30243000 (Navy) (Shared)

5. Related Programs:

None.

6. Mission and Description:

The existing constellation of Ultra High Frequency (UHF) communication satellites provides key command and control links for mobile forces of the DoD and other Government Agencies. As Executive Agent, the Navy is charged with maintaining the continuity of the space segment. The UHF Follow-On Program provides a new generation of communication satellites to replenish the existing constellation. The first UHF Follow-On satellite became operational in December 1993.

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7. Program Highlights:

a. Significant Historical Developments --

Due to the urgent need to satisfy DoD communication requirements, the Secretary of Defense designated the UHF Follow-On Program a major acquisition program in May 1988.

A Defense Acquisition Board (DAB) Milestone IIIA decision was made on July 22, 1988 authorizing the program to enter production. After full and open competition, a firm fixed priced contract was awarded to Hughes Aircraft Company on July 29, 1988. Congress approved a multiyear procurement of this system in the FY89 Defense Authorization Act.

The Navy's Operational Test and Evaluation Force conducted an early operational assessment concluding that the UHF Follow-On (UFO) satellite system is potentially operationally effective and suitable.

The DAB program review held on 25 May 1990 reaffirmed the decision to proceed with the UHF Follow-On production and approved adding a limited Extremely High Frequency (EHF) capability pursuant to requirements promulgated by the Joint Chiefs of Staff (JCS), beginning with the fourth launched satellite. The acquisition baseline incorporating the EHF capability was signed by the Defense Acquisition Executive on 9 October 1990.

The first UHF Follow-on (UFO) satellite, F1, was launched on 25 March 1993 and subsequently declared a total loss as a result of underperformance of the launch vehicle. The Government received \$199M in contract remedies for the loss.

Acquisition Program Baseline Change 1, dated 16 June 1993, revised the milestone objectives for Production Acceptance Test and Evaluation Initial (PAT&E-I), Operational Testing Phase III (OT-III), and Initial Operational Capability (IOC).

The second UFO satellite, F2, was launched on 3 September 1993, and became operational over the Indian Ocean on 2 December 1993 to achieve program IOC.

In the FY-94 Defense Appropriations Act, Congress approved the use of the \$199M contract remedies from the F1 loss to procure and launch an EHF capable replacement satellite.

On 26 January 1994, a contract modification was awarded at the not-to-exceed price of \$197M for an Extremely High Frequency (EHF) capable tenth satellite to replace satellite F1.

The third Ultra High Frequency follow-On (UFO) satellite, F3,

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7a. Program Highlights (Cont'd):

successfully launched on 24 June 1994, is operational over the Atlantic Ocean.

In July 1994, following a very successful OT-III, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) reported satellite F2 to be operationally effective and suitable.

b. Significant Developments Since Last Report --

The fourth UFO satellite, F4, the first to include the EHF Space Package, was successfully launched aboard an Atlas II launch vehicle on 28 January 1995, and became operational over the Pacific Ocean on 16 March 1995.

The fifth UFO satellite, F5, successfully launched aboard an Atlas II launch vehicle on 31 May 1995, became operational over the Indian Ocean on 26 July 1995.

The sixth UFO satellite, F6, successfully launched aboard an Atlas II launch vehicle on 22 October 1995, became operational over CONUS on 22 December 1995.

On 1 November 1995, following a very successful OT-IIIB, Commander, Operational Test and Evaluation Force (COMOPTEVFOR) reported F4 and the EHF Space Package to be operationally effective and suitable.

The UFO Program Office held an Interim Global Broadcast Service System Requirement Review with Hughes Space and Communications Company on 13 December 1995.

The Intelligence Program Review Decisions Memorandum, 27 December 1995, required hosting an Interim Global Broadcast Service capability on UFO satellites eight through ten.

This system will satisfy mission requirements.

c. Changes Since As Of Date --

In February 1996, DoD forwarded a special FY 96 Above Threshold Reprogramming request to Congress in order to initiate integrating an Interim Global Broadcast Service capability on UFO satellites eight through ten.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline of 16 June 1993. There are no Nunn-McCurdy unit cost breaches.

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UHF FOLLOW-ON, December 31, 1995

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Designation as a Major Defense Acquisition Program	MAY 88	N/A	MAY 88
Milestone IIIA (DAB)	JUL 88	JUL 88	JUL 88
Contract award	JUL 88	JUL 88	JUL 88
System Requirement Review (SRR)	OCT 88	OCT 88	OCT 88
Product Acceptance Test & Evaluation (PAT&E)-G (Start Ground Testing)	NOV 88	NOV 88	NOV 88
Preliminary Design Review (PDR)	APR 89	APR 89	APR 89
Critical Design Review (CDR)	MAR 90	MAR 90	MAR 90
DAB Program Review	MAY 90	MAY 90	MAY 90
PAT&E-I (Start in-orbit testing)	SEP 92	OCT 93	OCT 93
OT-III	OCT 92	APR 94	APR 94
IOC	DEC 92	DEC 93	DEC 93
OT-IV (Satellite No. 4 w/EHF)	FEB 95	FEB 95	AUG 95
IOC (Satellite No. 4 w/EHF)	TBD	MAY 95	MAR 95

b. Previous Change Explanations --

The Production Estimate was adjusted to reflect the program as stated in the Acquisition Program Baseline dated 9 October 1990. Due to the failure of satellite F1, PAT&E-I (Start in-orbit testing), OT-III, and IOC milestones could not be achieved in 1992. As a result, under the Approved Program, those milestone objectives and the IOC (Satellite No. 4 w/EHF) objective were changed according to Acquisition Program Baseline Change 1 dated 16 June 1993.

The current estimate for OT-IV was changed from February 1995 to August 1995 for two reasons: (1) The launch of satellite F4, the satellite required for OT-IV testing, was delayed from First Quarter FY-95 until Second Quarter FY-95. (2) Although satellite F4 became operational in March 1995, operational testing was being delayed until terminals were available for testing.

IOC (Satellite No. 4 w/EHF) was achieved in March 1995.

c. Current Change Explanations -- None

d. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

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9d. Schedule (Cont'd):

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Launch capability	Dual Launch Compatible	Dual launch compatible	/ Expendable launch vehicle	Expendable launch vehicle	Expendable launch vehicle
Nuclear Hardening	Comply with SM-416-84 levels	Comply with SM-416-84 levels	/ Comply with SM-416-84 levels	Comply with SM-416-84 levels	Comply with SM-416-84 levels
Anti-jam uplink channel capacity for fleet broadcast (per satellite)	3	3	/ 1	3	3
Effective Isotropic Radiated Power (EIRP) and capacity for UHF channels:					
25 KHz channels w/28 dBW (channels)	3	3	/ 2	3	3
25 KHz channels w/26 dBW (channels)	15	15	/ 14	15	15
5 KHz channels w/20 dBW (channels)	21	21	/ 20	21	21
UHF Interoperability	Compatible with all existing UHF terminals except frequency hoppers	Compatible with all existing UHF terminals except frequency hoppers	/ Compatible with all existing UHF terminals except frequency hoppers	Compatible with all existing UHF terminals except frequency hoppers	Compatible with all existing UHF terminals except frequency hoppers
EHF Requirements (for satellites 4-9)					

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
EHF Crossbanding	EHF uplink may be down-linked on SHF, (20 GHZ) UHF, or both	EHF uplink may be down-linked on SHF (20 GHZ), UHF, or both	/ EHF uplink may be down-linked on SHF (20 GHZ), UHF or both	EHF uplink may be down-linked on SHF (20 GHZ) UHF, or both	EHF uplink may be down-linked on SHF (20 GHZ) UHF, or both
EHF interoperability	Compatible with Milstar terminals and MIL-STD-1582	Compatible with Milstar terminals and MIL-STD-1582	/ Compatible with Milstar terminals and MIL-STD-1582	Compatible with Milstar terminals and MIL-STD-1582	Compatible with Milstar terminals and MIL-STD-1582
EHF EIRP for Earth coverage antenna (dBW)	27	27	/ 27	27	27
EHF EIRP for 5 degree steerable spot beam antenna (dBW within 2.5 degree of boresight)	37	37	/ 37	37	37
EHF Capability					
Communication Channels	7	7	/ 7	7	7
Telemetry & Command Channel	1	1	/ 1	1	1
Broadcast uplink Channels	3	3	/ 3	3	3
System Availability (%)	95	95	/ 90	99	95
Mean mission duration					
Years	10	10	/ 10	10	10
Years Design Life	14	14	/ 14	14	14
Fuel Quantity					
Years station keeping	14	14	/ 14	14.5	14
15 degree/day move	1	1	/ 1	1	1

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Cryptographically secure command & telemetry links	Successful command execution & telemetry reception using NSA approved devices	Successful command execution & telemetry reception using NSA approved devices	Successful command execution & telemetry reception using NSA approved devices	Successful command execution & telemetry reception using NSA approved devices
Anti-jam broadcast and command	DIA Validate NTIC threat level (Classified)	DIA validate NTIC threat level (classified)	DIA / valdtd NTIC threat level (classified)	/DIA valdtd NTIC threat level (classified)
Autonomy (Up to one month): Probability of reacquisition (%)	95	95	/ 90	95
Frequency Plan	As required by MJCS 68-88	As required by MJCS 68-88	/ MJCS 68-88	As required by MJCS 68-88

b. Previous Change Explanations --

"Launch capability" and "EHF capability" were added as baseline characteristics.

c. Current Change Explanations --

None

Note: UHF Interoperability and System Availability were demonstrated during OT-III.

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10d. Performance Characteristics (Cont'd):

d. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	1479.1	1526.4	1558.7
Flyaway	(1479.1)		(1558.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	1479.1	1526.4	1558.7
Escalation	237.0	318.9	309.8
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(237.0)	(318.9)	(309.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1716.1	1845.3	1868.5
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10</u>	<u>10</u>	<u>9</u>
Total	10	10	9

Procurement of the tenth satellite is funded with the contract remedies resulting from the loss of the first satellite. The number of deliveries has therefore increased from nine to ten.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

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UHF FOLLOW-ON, December 31, 1995

11e. Total Program Cost and Quantity (Cont'd):

e. References --

Production Estimate:

Acquisition Decision Memorandum of May 30, 1990, Subj: "UHF Follow-On Communication Satellite Baseline."

Approved Program:

NAE Approved Acquisition Program Baseline dated June 16, 1993.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JUN 93 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY88\$)	1558.7	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	173.19	152.64	13.46
b. Procurement			
(1) Cost (BY88\$)	1558.7	1526.4	
(2) Quantity	9	10	
(3) Unit Cost	173.19	152.64	13.46

Procurement of the tenth satellite (F10) is funded with contract remedies resulting from the loss of the first satellite (F1). The tenth satellite will be delivered in FY 99.

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1716.1	0.0	1716.1
Previous Changes:				
Economic	-	+30.8	-	+30.8
Quantity	-	-113.2	-	-113.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	+85.0	-	+85.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+2.6	-	+2.6
Current Changes:				
Economic	-	-9.1	-	-9.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	149.7	-	+149.7
Estimating	-	9.2	-	+9.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+149.8	-	+149.8
Total Changes	-	+152.4	-	+152.4
Current Estimate	-	1868.5	-	1868.5

UHF FOLLOW-ON, December 31, 1995

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1479.1	0.0	1479.1
Previous Changes:				
Quantity	-	-90.7	-	-90.7
Schedule	-	+2.5	-	+2.5
Engineering	-	-	-	-
Estimating	-	+48.6	-	+48.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-39.6	-	-39.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	112.1	-	+112.1
Estimating	-	7.1	-	+7.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	+119.2	-	+119.2
Total Changes	-	+79.6	-	+79.6
Current Estimate	-	1558.7	-	1558.7

Revised escalation indices.

b. Previous Change Explanations --

Procurement

- Economic: Revised economic escalation rates.
- Quantity: Deletion of funding for production and launch of Spacecraft #10.
- Schedule: Delay in funding for Expendable Launch Vehicle (ELV) services for S/C #7,8,9.
- Engineering: Addition of Global Broadcast System Mod
- Estimating: Current and prior year inflation offset; addition of EHF capability; revised annual ELV payment schedule; reduced funding due to elimination of Space Transportation System (STS) option; revised

UHF FOLLOW-ON, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

engineering services on production contract for
FY94-97.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-9.1
Addition of Global Broadcasting System Mod UHF/PO for satellites F8, F9 and F10 (Engineering)	+112.1	+149.7
Adjustment for Current and Prior Inflation (Estimating)	+7.1	+9.2
 Procurement Subtotal	<u>+119.2</u>	<u>+149.8</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
171.610	2.411	6.490	--	16.633	10.467	--	--	36.001	207.611

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --

UHF FOLLOW-ON:

Hughes Aircraft Company, El Segundo, CA
N00039-88-C-0300, FFP
Award: July 29, 1988
Definitized: July 29, 1988

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1374.7	N/A	10

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$1612.0	N/A	10

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$1612.0	\$1612.0

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

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15. Contract Information (Cont'd):

Explanation of Change: None.

Cost and Schedule variance reporting is not required on the FFP contract.

The current contract price includes the addition of an RHF capability which was contained in a contract modification executed on 13 Dec 1990. Procurement of the tenth satellite is funded with the contract remedies resulting from the loss of the first satellite. The number of deliveries has therefore increased from nine to ten.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

(1) Percent Program Completed: 90.9% (10 yrs/11 yrs)

(2) Percent Program Cost Appropriated: 93.9% (\$1755.3 / \$1868.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY87-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	1667.9	87.4	113.2	-	1868.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1667.9	87.4	113.2	-	1868.5

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UHF FOLLOW-ON, December 31, 1995

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1507 Weapons Procurement, Navy

1987				22.6	23.3	23.3	23.3	2.7
1988	1	88.3	187.6	115.6	123.9	123.9	123.4	3.0
1989				142.6	158.8	158.8	158.2	4.2
1990	2		246.2	277.3	319.5	319.5	319.5	4.0
1991	3	90.1	439.7	207.3	244.9	244.9	239.4	4.3
1992	3		479.3	207.8	251.7	251.7	246.8	2.8
1993				200.5	247.4	247.3	179.4	2.7
1994				132.5	167.1	166.9	137.5	2.0
1995		5.1		102.0	131.3	131.3	84.5	1.9
1996		14.4		66.4	87.4	45.8		2.0
1997		8.0		84.1	113.2			2.2
Subtot	9	205.9	1352.8	1558.7	1868.5	1713.4	1512.0	
Grand Total	9	205.9	1352.8	1558.7	1868.5	1713.4	1512.0	

Procurement of the tenth satellite (F10) was funded with contract remedies resulting from the loss of the first satellite (F1).

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17. Production Rate Data:

- a. Deliveries to Date --
- | | |
|-------------|--------------------|
| RDT&E | <u>Plan/Actual</u> |
| Procurement | 0/0 |
| | 5/5 |
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The support functions for UHF Follow-On will be similar to those required for the existing UHF communications satellite constellation. Costs are born by the Program Executive Officer for Space, Communications and Sensors and the Naval Space Command. The operations and support cost estimate was made in February 1990 in support of a SECDEF Cost Analysis Improvement Group (CAIG) review. The antecedent annualized costs listed represent the average costs for the FLTSAT satellite constellation for FY 1986 to FY 1988.

b. Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per UHF Follow-On	Avg Annual Cost Per FLTSAT Support
Orbital Support	1.6	2.0
Anomaly Analysis	0.0	0.6
GSE&I	0.0	0.5
Total	1.6	3.1

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&MN	4.2	0.8	0.8	1.0	6.8
Total	4.2	0.8	0.8	1.0	6.8

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(05A)823)
PROGRAM: JTUAV

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Joint Tactical Unmanned Aerial Vehicles (JTUAV)

2. (U) DoD Component: Navy

Joint Participants:
Army, Navy, Marine Corps

3. (U) Responsible Office and Telephone Number:

JTUAV Project Office	COL Michael I. Howell
Attn: SFAE-UAV	Assigned: August 24, 1995
RedstoneArsenal, AL 35898-7459	AV 788-4449 COMM 205-895-4449

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0305154D
PROCUREMENT:
APPN 0300 ICN 000000 (DCA/DNA)

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

96-0-0453

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5. (U) Related Programs:

None.

6. (U) Mission and Description:

The Unmanned Aerial Vehicles-Joint Program had encompassed two significant programs; Hunter/Shipboard and Maneuver. UAVs are family of powered aerial vehicles which do not carry a human operator and which are designed to carry a non-lethal payload. Missions may include: Reconnaissance; surveillance; target acquisition; target spotting; command and control; meteorological data collection; nuclear, biological, and chemical detection; special operations support; and disruption and deception.

The Maneuver, formerly Close Range System was to provide Reconnaissance, Surveillance, and Target Acquisition (RSTA) capabilities and meteorological data to commanders of lower level tactical units (Brigade & Battalion's). The system was to be highly mobile, easy to operate and maintain with a minimum of manpower and training and capable of launch and recovery in constrained operational environments.

The Hunter/Shipboard, formerly Short Range system was the developmental baseline for a common architecture to achieve interoperability within the family of UAVs. The system provides commanders with near-real-time intelligence, reconnaissance, and battlefield surveillance. Hunter/Shipboard was intended for employment in environments where immediate feedback is needed, manned aircraft are unavailable, or excessive risk or other conditions render use of manned aircraft less than prudent.

Under Secretary of Defense (USD) (Acquisition and Technology) (A&T) has rendered an Acquisition Decision Memorandum (ADM) on both the JTUAV Maneuver and Hunter programs, USD (A&T) Memos of December 21, 1995 and January 31, 1996 respectively. These ADM changes are reflected in section 7 of this report.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In response to congressional direction in FY88 to consolidate the management of DOD nonlethal UAV programs, the Under Secretary of Defense (Acquisition) established the UAV Joint Project Office (JPO). An Executive Committee (EXCOM) was established on April 7, 1988 with overall responsibility for DOD UAV programs at the OSD level. In 1991 the EXCOM was disestablished and DOD UAV programs were brought under the Defense Acquisition Board (DAB) procedures and management. The Navy is the Executive Service for the UAV JPO, with full authority, responsibility, and accountability for designing, developing, procuring, and transitioning UAV systems to meet the Services' needs. The systems must meet the requirements validated by

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7a. (U) Program Highlights (Cont'd):

the Joint Requirements Oversight Council (JROC) commensurate with available funding.

The following gives specific highlights for each UAV program:

Maneuver: A risk reduction technology demonstration program for the Maneuver system was implemented during FY 1991 and completed FY 1992. Six companies participated in a technology demonstration of a two man portable/200 pound class air vehicle. In addition, two companies demonstrated lightweight Forward Looking Infrared (FLIR) payload devices in the 50 pound class. These efforts reduced both the technical and schedule risk for the Maneuver program. Demonstrations showed that current technology supports the concurrent use of a 50 pound FLIR and a two man portable/200 pound air vehicle and established an excellent competitive industrial base for the program.

Hunter/Shipboard: McDonnell Douglas Missile Systems Company and Israel Aircraft Industries (IAI) were awarded contracts in September 1989. Following Technical Evaluation Test and Limited User Test I (LUT I), the source selection authority selected IAI as the winning Hunter/Shipboard prime contractor on June 30, 1992. On December 28, 1992 the contract with IAI was novated, making TRW the prime contractor and IAI the principal sub-contractor. The DAB recommended approval and the Acquisition Decision Memorandum of January 19, 1993 approved Low Rate Initial Production of seven systems, and approved initiating effort on the Block II improvement program.

b. (U) Significant Developments Since Last Report --

Maneuver: On December 21, 1995, the Under Secretary of Defense (Acquisition and Technology) signed an Acquisition Decision Memorandum (ADM) that approved the initiation of an Advanced Concept Technology Demonstration (ACTD) for a single Tactical Unmanned Aerial Vehicle (TUAV) System. The ADM also stated that the Director, Acquisition Program Integration (API), shall remove the Maneuver component of the JTUAV program from the Major Defense Acquisition Program (MDAP) list.

Based on the December 21, 1995 ADM, this will be the final SAR for the Maneuver program.

Hunter: The Under Secretary of Defense (Acquisition and Technology) reviewed the Joint Tactical Hunter Unmanned Aerial Vehicle program and executed an ADM of January 31, 1996 which provides for:

- Complete acceptance of systems 6 and 7, and terminate the Hunter acquisition program by allowing the current contract to

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7b. (U) Program Highlights (Cont'd):

expire.

- Provide one Hunter system to the Army for operations concept refinement, and continuation training until the Tactical and Predator UAV programs provide assets for these uses.

- Provide sufficient Hunter assets to support initial operator and maintainer training at the Joint UAV Training Center and the Joint UAV Systems Integration Laboratory to support joint service UAV interoperability, testing and evaluation.

- Provide the required logistical support for the operational assets. All other Hunter equipment should be placed in inactive status and stored for utilization/disposal as determined by the Army.

- Do not pursue additional upgrades to the current Hunter system. However, those commonality and interoperability efforts beyond the Hunter program Common Automated Recovery and Landing Systems UAV CARLS, UAV Payload Demonstrations, Downsized Subsystem and Mission Critical Computer Resources (MCCR) upgrade should continue under the designated UAV program.

- Cancel the previously approved Hunter-Predator User Demonstration.

The Director, API, shall remove the Hunter program from the MDAP list.

Based on the JTUAV Hunter ADM, this will be the final SAR for the JTUAV Hunter program.

c. (U) Changes Since As Of Date -- See Section 7.b above.

8. (U) Threshold Breaches:

The JTUAV Hunter/Shipboard program has a Nunn McCurdy unit cost and Acquisition Program Baseline (APB) breaches due to program termination.

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9. (U) Schedule:
Maneuver

a. (U) Milestones --	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>	
Milestone 0	JAN 90	N/A	JAN 90	
Milestone I/II	SEP 92	N/A	NOV 95	
IOT&E				
Start	FEB 96	N/A	N/A	(Ch-1)
Complete	FEB 97	N/A	N/A	(Ch-1)
Milestone III	FEB 97	N/A	N/A	(Ch-1)
Full Rate Production Contract Award	FEB 97	N/A	N/A	(Ch-1)
First Unit Equip (FUE)	JUN 97	N/A	N/A	(Ch-1)
Initial Operating Capability (IOC)	FEB 98	N/A	N/A	(Ch-1)

b. (U) Previous Change Explanations --

Delay in final approval of the Joint Operational Requirements Document (JORD), DARO FY95 funding release and completion of the Cost Operational Effectiveness Analysis (COEA) resulted in delay of Milestone I/II, Milestone III and all subsequent milestone schedules.

c. (U) Current Change Explanations --

(Ch-1) On December 21, 1995 the Under Secretary of Defense (Acquisition and Technology) signed an ADM that approved the initiation of an Advanced Concept Technology Demonstration (ACTD) for a single Tactical Unmanned Aerial Vehicle (TUAV) system. The ADM phases out the Maneuver component of the JTUAV program.

d. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-009-91, Service Review of UAV System Rqmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program: None.

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9d. (U) Schedule (Cont'd):
JT UAV Hunter/Shipboard

a. (U) Milestones --	Development Estimate	Approved Program	Current Estimate	
Milestone 0	JAN 89	JAN 89	JAN 89	
Milestone I	MAY 89	MAY 89	MAY 89	
Milestone II/IIIA	AUG 89	AUG 89	AUG 89	
NDI Contract Award Date	N/A	SEP 89	SEP 89	
Service Final DT&E (TET)				
Start	N/A	DEC 90	DEC 90	
Complete	N/A	APR 92	APR 92	
Early Operational Assessment (LUT I)				
Start	N/A	JUN 92	JUN 92	
Complete	N/A	JUL 92	JUL 92	
Low-Rate Production Review (LRPR)	N/A	JAN 93	JAN 93	
Low-Rate Production Award	SEP 92	JAN 93	FEB 93	
Low-Rate Production First Delivery	DEC 93	MAY 94	APR 95	
IOT&E				
Start	APR 94	NOV 94	N/A	(Ch-1)
Complete	AUG 94	MAR 95	N/A	(Ch-1)
Milestone IIIB	SEP 92	N/A	N/A	
Milestone IIIC	SEP 94	N/A	N/A	
Milestone III	N/A	JUN 95	N/A	(Ch-1)
Full Rate Production Contract Award	SEP 94	JUN 95	N/A	(Ch-1)
First Unit Equipped (FUE)	OCT 94	JUL 95	N/A	(Ch-1)
Organic Support	N/A	JUL 95	N/A	(Ch-1)
Initial Operating Capability (IOC)	JUN 95	FEB 96	N/A	(Ch-1)

b. (U) Previous Change Explanations --

NDI contract award date, Service final DT&E (TET) start, Early Operational Assessment (LUT I) start and complete, Low-Rate Production Review (LRPR), Milestone III, and Organic Support were added to the approved Acquisition Program Baseline, dated 19 January 1993.

The scheduled completion of the Technical Evaluation Test (TET) slipped from October 1991 to April 1992 because insufficient data had been accumulated to validate if the competing systems were ready for Limited User Test (LUT). In addition technical difficulties delayed the acceptance of the LRIP systems. These events delayed all subsequent milestone schedules and prompted the PM to pursue an acquisition strategy of putting the equipment into the hands of the users. The users would evaluate, identify deficiencies and collect performance data on the system to allow correction of deficiencies prior to IOT&E to reduce risk. Milestones IIIB and IIIC were replaced by one full rate production decision, Milestone III. IOT&E

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9b. (U) Schedule (Cont'd):

JT UAV Hunter/Shipboard

and subsequent milestones reflected the values introduced by the proposed baseline for the JTUAV Hunter program which introduced the concept of Fly-Test-Fly. This delay in schedule affected IOT&E start and stop, Milestone III and all subsequent milestones.

c. (U) Current Change Explanations --

(Ch-1) The Under Secretary of Defense (A&T) has signed the JTUAV Hunter ADM on January 31, 1996 that terminates the Hunter acquisition program.

d. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROC Hunter/Shipboard Annex approval Feb 1995. JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-008-91, June 1991; UAV JOP Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992, approved January 19, 1993 (Initial LRIP of seven systems).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 19, 1993.

10. (U) Performance Characteristics:

Maneuver

a. (U) Performance --	DE	Approved Program		Demonstrated Perf	Current Estimate	
		Objective/Threshold				
Radius of Action (km)	50	N/A	/ N/A	TBD	N/A	(Ch-1)
Mission Duration (hrs)	4	N/A	/ N/A	TBD	N/A	(Ch-1)
Altitude	15000	N/A	/ N/A	TBD	N/A	(Ch-1)
Gross Take-off Weight (lbs)	100	N/A	/ N/A	TBD	N/A	(Ch-1)
					N/A	

b. (U) Previous Change Explanations --

Mission duration (hrs), Altitude and Gross Take-off weight (lbs) parameters are latest testing data from the Operational Requirement Document.

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10c. (U) Performance Characteristics (Cont'd):
Maneuver

c. (U) Current Change Explanations --

(Ch-1) USD(A&T) ADM of December 21, 1995 removed Maneuver from MDAP.

d. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-009-91, Service Review of UAV System Rqmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992.

(U) Approved Program: None.

JT UAV Hunter/Shipboard

a. (U) Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Mission Duration (hrs)	12	12	/ 8	12	8
Climb Rate (ft/min) @ MSL standard day	1000	1000	/ 500	1000	500
Altitude (ft/MSL standard day)	N/A	30000	/ 15000	15500	15500 (Ch-1)

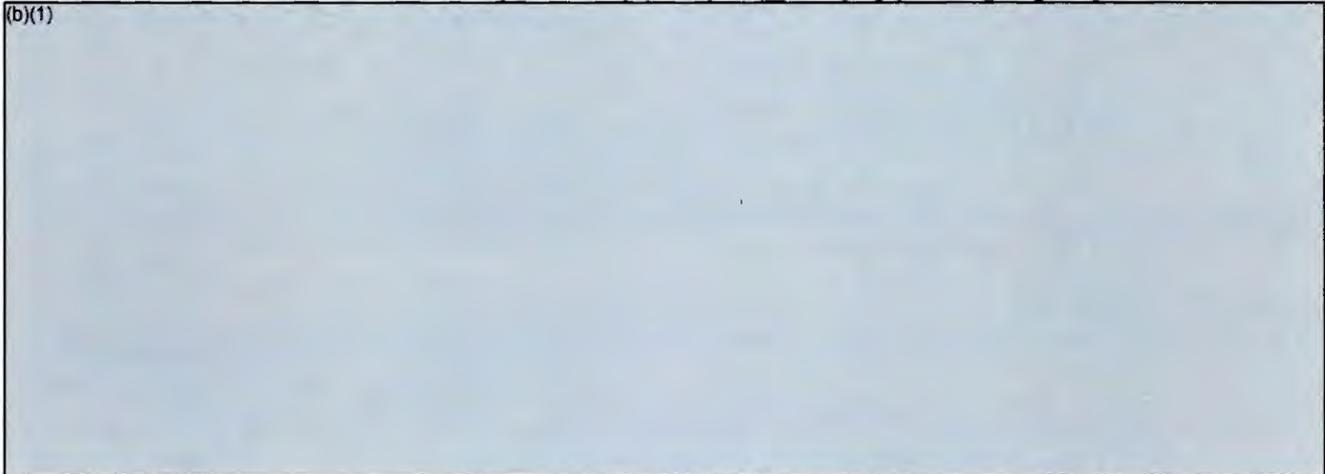
(b)(1)

Readiness/Support					
MTBMCF (hrs)	20	30	/ 20	30	20
MTBOMF (hrs)	13	28	/ 13	28	13
O-level MTTR (hrs)	.5	N/A	/ N/A	N/A	N/A
Launch/Recovery Area (unimproved)(meters)	N/A	LHA, LHD, CV-CVN Capable	/ 200x75	LHA, LHD, CV-CVN Capable	200x75
Set-Up (hrs)	N/A	2	/ 3	2	3
Plan Mission and Launch after Emplacement (hrs)	N/A	.5	/ 2	.5	2
Tear Down (hrs)	N/A	1.5	/ 1.5	1.9	1.5
Imaging Payload Performance Recognize Light Tactical Vehicles at:					

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10a. (U) Performance Characteristics (Cont'd):
JT UAV Hunter/Shipboard

	Approved Program	Demon- strated	Current
--	---------------------	-------------------	---------



b. (U) Previous Change Explanations --

Mission Duration (hrs), and Climb rate (ft/min) @ MSL standard day parameters were latest testing data from the ORD.

Altitude (ft/msl standard day), Operating reange (km), Endurance at operating range (hrs), Set-up (hrs), Plan mission and launch after emplacement, Tear down (hrs), Vehicles at: slant range (m), Altitude (m), Personnel in the Open at: slant Range (m), altitude (m), Availabillity (Ao) (%) One air vehicle (6 hr flight), relay flight (%) (8 hr flight), and Operational range (km) characteristics were added to the approved Acquisition Program Baseline, dated January 19, 1993. Relay Flight (%) (8 hr flight) changed from 65 to 85 to correct previous error.

c. (U) Current Change Explanations --

(Ch-1) Altitude (ft/MSL standard day) changed from 15,000 to 15,500 to correct previous error.

d. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROC Hunter/Shipboard Annex approval Feb 1995. JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-006-91, Service Review of UAV Systems Rqmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM) signed January 3, 1992, approved January 19, 1993 (Initial LRIP

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10d. (U) Performance Characteristics (Cont'd):

JT UAV Hunter/Shipboard
of seven systems).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated January 19, 1993.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

Maneuver

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	76.7	0.0	16.1
Procurement	556.7	0.0	0.0
Flyaway	(377.2)		(0.0)
Other Weapon Systems	(149.1)		(0.0)
Peculiar Support	(3.0)		(0.0)
Initial Spares	(27.4)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	633.4	0.0	16.1
Escalation	384.4	0.0	4.2
Development (RDT&E)	(21.4)	(0.0)	(4.2)
Procurement	(363.0)	(0.0)	(0.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1017.8	0.0	20.3
b. (U) Quantity --			
Development (RDT&E)	4	N/A	0
Procurement	<u>172</u>	<u>N/A</u>	<u>0</u>
Total	176	N/A	0

c. (U) Foreign Military Sales/International Cooperative Programs --
None.

d. (U) Nuclear Costs -- None

e. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROCM-009-91, UAV Program Fielding Sequence, March 25, 1991; JROCM-009-91, Service Review of UAV Systems Rqmts, April 4, 1991; JROCM-008-91, June 1991; UAV JPO Charter Signed October 16, 1989. Acquisition Decision Memorandum (ADM), signed January 3, 1992.

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11a. (U) Total Program Cost and Quantity (Cont'd):
Maneuver

(U) Approved Program: None.

JT UAV Hunter/Shipboard

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	138.2	131.3	175.0
Procurement	1093.4	1608.7	446.6
Total Flyaway	(910.0)		(372.3)
Other Weapon Systems	(118.7)		(47.9)
Peculiar Support	(29.2)		(3.6)
Initial Spares	(35.5)		(22.8)
Construction (MILCON)	0.0	15.7	8.2
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	1231.6	1755.7	629.8
Escalation	429.8	814.3	137.5
Development (RDT&E)	(31.8)	(29.2)	(36.8)
Procurement	(398.0)	(780.9)	(99.0)
Construction (MILCON)	(0.0)	(4.2)	(1.7)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1661.4	2570.0	767.3

USD(A&T) ADM of January 31, 1996 terminates the Hunter acquisition program, removes Hunter from the MDAP, and approves of further evaluation of Army CONOPS and UAV training with existing assets.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>50</u>	<u>50</u>	<u>9</u>
Total	50	50	9

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DOD UAV 1994 Master Plan approved March 31, 1994; JROC Hunter/Shipboard Annex approval Feb 1995. JROCM-006-91, UAV Program Fielding Sequence, March 25, 1991. JROCM-008-91, June 1991; UAV JOP Charter signed October 16, 1989. Acquisition Decision Memorandum (ADM), signed January 3, 1992, approved January 19, 1993 (Initial LRIP of seven systems).

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11a. (U) Total Program Cost and Quantity (Cont'd):
JT UAV Hunter/Shipboard

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated January 19, 1993.

12. (U) Unit Cost Summary:

Maneuver

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (N/A)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	16.1	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Procurement			
(1) Cost (BY88\$)	0.0	0.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

No APB was approved for Maneuver. This program has been replaced and removed from the Major Defense Acquisition Program List.

JT UAV Hunter/Shipboard

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JAN 93 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	629.8	1755.7	
(2) Quantity	9	50	
(3) Unit Cost	69.978	35.114	99.29

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12. (U) Unit Cost Summary (Cont'd):

JT UAV Hunter/Shipboard

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY88\$)	446.6	1608.7	
(2) Quantity	9	50	
(3) Unit Cost	49.622	32.174	54.23

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JAN 93 APB)	<u>Percent Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	767.3	2570.0	
(2) Unit Cost	85.256	51.400	65.867
d. (U) Procurement			
(1) Cost (TY\$)	545.6	2389.6	
(2) Unit Cost	60.622	47.792	26.846

e. (U) <u>Changes from the Previous SAR (JUN 95 SAR) -</u>		
	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY88\$)	29.709	73.78
(2) PAUC (BY88\$)	13.355	36.82
(3) PAUC Quantity	9	N/A
(4) PAUC (TY\$)	25.837	43.48
(5) APUC (TY\$)	6.155	11.30

f. (U) Initial SAR (DEC 92)		
(1) Program Acquisition Cost (BY\$) --	1873.2	
(2) Program Acquisition Cost (TY\$) --	2570.0	

g. (U) Unit Cost Changes.

(1) (U) PAUC --

The Under Secretary of Defense (Acquisition and Technology) executed an Acquisition Decision Memorandum (ADM) on January 31, 1996 which terminated the JTUAV Hunter/Shipboard acquisition program after

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12. (U) Unit Cost Summary (Cont'd):

JT UAV Hunter/Shipboard

acceptance of the seven LRIP systems. Funds are only being provided for contractual obligations, close out of the contract and Army efforts as defined in USD(A&T) ADM of January 31, 1996. This resulted in a PAUC termination breach.

(2) (U) APUC --

Same as PAUC.

13. (U) Cost Variance Analysis:
Maneuver

JTUAU, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Maneuver

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	98.1	919.7	0.0	1017.8
Previous Changes:				
Economic	-0.5	-16.0	-	-16.5
Quantity	-	-498.7	-	-498.7
Schedule	-	+70.8	-	+70.8
Engineering	-	-	-	-
Estimating	-18.9	+424.9	-	+406.0
Other	-	-	-	-
Support	-	+91.7	-	+91.7
Subtotal	-19.4	+72.7	-	+53.3
Current Changes:				
Economic	-1.8	-68.0	-	-69.8
Quantity	-	-720.8	-	-720.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-56.6	-	-	-56.6
Support	-	-203.6	-	-203.6
Subtotal	-58.4	-992.4	-	-1050.8
Total Changes	-77.8	-919.7	-	-997.5
Current Estimate	20.3	-	-	20.3

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13a. (U) Cost Variance Analysis (Cont'd):
Maneuver

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	76.7	556.7	0.0	633.4
Previous Changes:				
Quantity	-	-282.6	-	-282.6
Schedule	-	+39.9	-	+39.9
Engineering	-	-	-	-
Estimating	-16.8	+306.3	-	+289.5
Other	-	-	-	-
Support	-	+3.5	-	+3.5
Subtotal	-16.8	+67.1	-	+50.3
Current Changes:				
Quantity	-	-440.8	-	-440.8
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-43.8	-	-	-43.8
Support	-	-183.0	-	-183.0
Subtotal	-43.8	-623.8	-	-667.6
Total Changes	-60.6	-556.7	-	-617.3
Current Estimate	16.1	0.0	-	16.1

USD(A&T) memo of 21 Dec 95 removed Maneuver from the MDAP and consolidated the Maneuver and Hunter programs into a single Tactical UAV ACTD requirement and program.

b. (U) Previous Change Explanations --

RD&E

Economic: Revised escalation indices. Economic adjustment for negative program change.

Estimating: Increased estimate to reflect revised escalation indices. Adjustment for Current & Prior Inflation. Re-evaluated program development requirements.

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13b. (U) Cost Variance Analysis (Cont'd):
Maneuver

Procurement

- Economic: Revised escalation indices.
- Schedule: Rephased annual procurement extending buy by 1 year.
- Estimating: Increased estimate to reflect revised escalation indices. Re-estimate of system cost and production.
- Support: Increased support estimate to reflect revised escalation indices. Increase in data, training service and equipment, other procurement, commercial equivalent equipment, and initial spares to support program rephasing.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.8
Adjustment for Project termination (Other)	-43.8	-56.6
 RDT&E Subtotal	<u>-43.8</u>	<u>-58.4</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-68.0
Adjustment for project termination (Quantity)	-440.8	-720.8
Adjustment for project termination (Support)	-183.0	-203.6
 Procurement Subtotal	<u>-623.8</u>	<u>-992.4</u>

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13a. (U) Cost Variance Analysis (Cont'd):
JT UAV Hunter/Shipboard

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	170.0	1491.4	0.0	1661.4
Previous Changes:				
Economic	-2.5	+36.5	-	+34.0
Quantity	-	+284.4	-	+284.4
Schedule	-	+93.4	-	+93.4
Engineering	+48.3	+30.6	-	+78.9
Estimating	+21.8	+642.4	+19.9	+684.1
Other	-	-	-	-
Support	-	+253.6	-	+253.6
Subtotal	+67.6	+1340.9	+19.9	+1428.4
Current Changes:				
Economic	-2.1	-18.8	-0.5	-21.4
Quantity	-	-1290.6	-	-1290.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-678.7	-	-678.7
Other	-23.7	-	-9.5	-33.2
Support	-	-298.6	-	-298.6
Subtotal	-25.8	-2286.7	-10.0	-2322.5
Total Changes	+41.8	-945.8	+9.9	-894.1
Current Estimate	211.8	545.6	9.9	767.3

13a. (U) Cost Variance Analysis (Cont'd):
JT UAV Hunter/Shipboard

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	138.2	1093.4	0.0	1231.6
Previous Changes:				
Quantity	-	+149.6	-	+149.6
Schedule	-	+20.5	-	+20.5
Engineering	+37.9	+23.1	-	+61.0
Estimating	+17.2	+433.8	+14.8	+465.8
Other	-	-	-	-
Support	-	+165.5	-	+165.5
Subtotal	+55.1	+792.5	+14.8	+862.4
Current Changes:				
Quantity	-	-862.2	-	-862.2
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-302.5	-	-302.5
Other	-18.3	-	-6.6	-24.9
Support	-	-274.6	-	-274.6
Subtotal	-18.3	-1439.3	-6.6	-1464.2
Total Changes	+36.8	-646.8	+8.2	-601.8
Current Estimate	175.0	446.6	8.2	629.8

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Economic adjustment for negative program change.

Engineering: Addition of Common Automatic Recovery System (CARS).

Estimating: Adjustment for current & prior inflation. Refined development requirements. Increased costs for Ada Conversion and Heavy Fuel Engine. Congressional directed transfer of T&E to Development and revised estimates due to decrements by the Defense Airborne Reconnaissance Office.

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13b. (U) Cost Variance Analysis (Cont'd):
 JT UAV Hunter/Shipboard

Procurement

- Economic:** Revised economic escalation indices. Economic adjustment for negative program change.
- Quantity:** Quantity increase of 2 systems. Inclusion of additional attrition air vehicles into FYDP program.
- Schedule:** Delay in procurement buy schedule. Stretch-out of Production. Rephasing of attrition air vehicles buys FY96-07.
- Engineering:** Addition of Shipboard variant.
- Estimating:** Adjustment for current & prior inflation. Increase in attrition spares (replacement air vehicles). Common Auto Recovery System. Realignment of funding to Services' requirements as approved by the UAV working group. Correction to align flyaway and support costs. Re-estimate of system cost and production support. Transfer of T&E from procurement to development and realignment of funding for requirements as approved by the JTUAV working group.
- Support:** Adjustment for current & prior inflation. Increased estimate for peculiar support, initial spares, and other weapon systems costs. Correction to align flyaway and support costs. Support equipment associated with system quantity changes, and schedule rephasing associated system support equipment. Increased estimate for other procurement weapon systems costs and re-estimate of peculiar test equipment.

MILCON

- Economic:** Revised escalation indices.
- Estimating:** Additional hanger facilities. Inflation adjustment.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.1
Project acquisition termination (Other)	-18.3	-23.7
RDT&E Subtotal	<u>-18.3</u>	<u>-25.8</u>

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13c. (U) Cost Variance Analysis (Cont'd):
 JT UAV Hunter/Shipboard

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-160.2
Economic adjustment for negative program change. (Economic)	N/A	+141.4
Quantity decrease of 43 units from 52 to 9 (Quantity)	-862.2	-1290.6
Allocation to estimating variance associated with quantity decrease (Estimating)	-302.5	-678.7
Decrease estimates for Other Weapon Systems, Peculiar Support and Initial Spares to program termination (Support)	-274.6	-298.6
Procurement Subtotal	<u>-1439.3</u>	<u>-2286.7</u>
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-0.5
Adjustment for project acquisition termination (Other)	-6.6	-9.5
MILCON Subtotal	<u>-6.6</u>	<u>-10.0</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Maneuver

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
5.783	--	--	--	--	--	--	--	--	N/A

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

JT UAV Hunter/Shipboard

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
33.228	1.400	39.572	10.378	8.767	0.600	-3.689	-5.000	52.028	85.256

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --
 (U) HUNTER/SHIPBOARD:
 TRW, SAN DIEGO, CA
 N00019-89-C-0346, FFP
 Award: September 15, 1989
 Definitized: September 15, 1989

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$458.8	N/A	9	\$458.8	\$458.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 100.0% (8 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$787.6 / \$787.6)

Maneuver

- (1) Percent Program Completed: 100.0% (1 yrs/1 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$20.3 / \$20.3)

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JT UAV Hunter/Shipboard

(1) Percent Program Completed: 100.0% (8 yrs/8 yrs)

(2) Percent Program Cost Appropriated: 100.0% (\$767.3 / \$767.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program Appropriation	Prior Years (FY88-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete	Total
RDT&E	232.1	-	-	-	232.1
Procurement	545.6	-	-	-	545.6
MILCON	9.9	-	-	-	9.9
O&M	-	-	-	-	-
Total	787.6	-	-	-	787.6

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Maneuver Appropriation	Prior Years (FY95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete	Total
RDT&E	20.3	-	-	-	20.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	20.3	-	-	-	20.3

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16b. (U) Program Funding Summary (Cont'd):
JT UAV Hunter/Shipboard

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

JT UAV Hunter/Shipboard					
<u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	211.8	-	-	-	211.8
Procurement	545.6	-	-	-	545.6
MILCON	9.9	-	-	-	9.9
O&M	-	-	-	-	-
Total	767.3	-	-	-	767.3

c. (U) Annual Summary -- Maneuver

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	
1995				16.1	20.3	4.0		1.9
Subtot				16.1	20.3	4.0		
Grand Total				16.1	20.3	4.0		

Appropriation: 0400 RDT&E, Defense Agencies

1995				16.1	20.3	4.0		1.9
Subtot				16.1	20.3	4.0		
Grand Total				16.1	20.3	4.0		

FY93 and FY94 funding was moved from Maneuver to Hunter.

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16c. (U) Program Funding Summary (Cont'd):
JT UAV Hunter/Shipboard

c. (U) Annual Summary -- JT UAV Hunter/Shipboard

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (\$)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 0400 RDT&E, Defense Agencies

1989				11.1	11.8	11.8	11.8	4.2
1990				8.9	9.9	9.9	9.9	4.0
1991				16.1	18.5	18.5	18.5	4.3
1992				12.9	15.3	15.3	15.3	2.8
1993				23.0	27.8	27.8	16.1	2.7
1994				42.4	52.3	52.3	12.2	2.0
1995				60.6	76.2	73.2	4.6	1.9
Subtot				175.0	211.8	208.8	88.4	

Appropriation: 0300 Procurement, Defense Agencies

1988				23.3	25.0	25.0	25.0	3.0
1989	2	7.3	23.8	31.6	35.2	35.2	35.2	4.2
1990	1	5.1	10.5	16.1	18.6	18.6	18.6	4.0
1991	1	7.6	3.5	21.8	25.8	25.8	25.8	4.3
1992	4	18.5	68.7	102.9	124.7	124.7	124.7	2.8
1993	1	33.7	46.8	104.4	128.9	128.9	128.9	2.7
1994		37.0		51.5	65.0	65.0	53.1	2.0

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16c. (U) Program Funding Summary (Cont'd):
JT UAV Hunter/Shipboard

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

1995		16.1	93.7	95.0	122.4	98.3	44.6	1.9
Subtot	9	125.3	247.0	446.6	545.6	521.5	455.9	

Appropriation: 0500 Military Construction, Defense Agencies

1992				8.2	9.9	9.9	9.9	2.8
Subtot				8.2	9.9	9.9	9.9	
Grand Total	9	125.3	247.0	629.8	767.3	740.2	554.2	

17. (U) Production Rate Data:

Maneuver

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

JT UAV Hunter/Shipboard

- a. (U) Deliveries to Date --

RDT&E	<u>Plan/Actual</u>
Procurement	0/0 9/7
- b. (U) Approved Design-to-Cost Objective -- N/A.

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18. (U) Operating and Support Costs:
Maneuver

a. (U) Assumptions and Ground Rules --

None.

b. (U) Costs -- None.

c. (U) Contractor Support Costs -- None.

JT UAV Hunter/Shipboard

a. (U) Assumptions and Ground Rules --

The primary elements of Operating and Support cost are Depot Maintenance, Replenishment Spares, Repair Parts, System Specific Base Ops, Transportation and Replenishment Training. O&S costs shown below are the average cost to support one system for one year. Military personnel cost are excluded.

There is no antecedent system.

O&S cost updated in Dec 1995.

b. (U) Costs -- (FY 1988 Constant (Base-Year) Dollars in Millions)

Cost Element	Hunter/ Shipboard Joint Tactical UAV System	No antecedent System System
Spares and Repair Parts	0.2	N/A
Replenishment Spares	0.4	N/A
Other O&S Costs	1.0	N/A
Total	1.6	N/A

c. (U) Contractor Support Costs -- None.

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*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: AAVV

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Advanced Amphibious Assault Vehicle (AAV)

2. DoD Component: USMC

3. Responsible Office and Telephone Number:

DRPM AAA	COL JAMES FEIGLEY
DEPT. OF THE NAVY	Assigned: July 6, 1993
UNITED STATES MARINE CORPS	AV 426-1104 COMM (703) 696-1104
WASHINGTON, DC 20380-0001	

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0603611M (Shared) Project B0020

5. Related Programs:

ASSAULT AMPHIBIOUS VEHICLE MODEL 7A1 (AAV7A1)

~~Security Clearance~~
~~Classification~~
~~(S)~~
 96 02117
~~DATE 02-19-96~~
~~BY [Signature]~~
 [Signature]
 Chief of the Office
 Naval Operations
 Dept. of the Navy

6. Mission and Description:

The Advanced Amphibious Assault Vehicle (AAV) Program will field a successor to the Marine Corps' current amphibious vehicle, the Assault Amphibious Vehicle Model 7A1 (AAV7A1). The AAV will provide principal means of tactical surface mobility for the Marine Air Ground Task Force (MAGTF) during both ship-to-objective maneuver and subsequent combat operations ashore. The AAV will provide the Marine Corps with the capabilities to execute the full range of its littoral warfare missions as well as the requisite survivability.

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6. Mission and Description (Cont'd):

offensive firepower, and mobility to support future combat operations ashore. The AAHV replaces the AAHV7A1 Vehicle.

7. Program Highlights:

a. Significant Historical Developments --

A mission area analysis, completed in 1988 to identify future littoral warfare requirements, identified significant deficiencies in the Marine Corps existing amphibious vehicle. A mission needs statement (MNS) was submitted to DoD and a series of Milestone 0 program reviews were conducted by the Defense Resources Board (DRB) and the Defense Acquisition Board (DAB) in 1988. The purpose of these reviews was to validate the stated mission need and permit the analysis of alternatives that would eliminate mission area deficiencies. Approval from both the DRB and DAB was received in 1988 and is documented in the Program Decision Memorandum (PDM) and Acquisition Decision Memorandum (ADM) respectively. Their approval formally initiated the Concept Exploration/Definition (CE/D) phase where no less than 13 alternative solutions have been evaluated. Based on this and other analyses, the Advanced Amphibious Assault Vehicle (AAHV) was determined to be the most effective system by a significant margin over all other candidates.

Both Advanced Amphibious Assault Vehicle (AAHV) contractors, United Defense Limited Partnership (UDLP) (formerly FMC Corporation) and General Dynamics Land Systems (GDLS), successfully fabricated Hydrodynamic Test Rigs (HTRs). The HTRs were approximately 0.8 Froude scale models of their respective AAHV designs. Both HTRs attained water speeds in excess of 30 knots and on 19 May 1993 GDLS' HTR operated for 1.4 hours on plane while covering 34 nautical miles at an average speed of approximately 25 knots. UDLP and GDLS submitted armor samples that have demonstrated and met the C/E phase AAHV armor protection requirement. In September 1993, both contractors were awarded contracts to design, fabricate, and test a full scale Automotive Test Rig (ATR). The contractors continued testing hydrodynamic test rigs at speeds exceeding 25 knots and maturing their AAHV designs. Both contractors completed testing AAHV hull and armor samples that meet the C/E phase AAHV requirement. Both contractors have completed the land mobility testing of their AAHV ATR at Aberdeen Proving Ground. Each contractor has completed fabrication an operational mock up of their vehicle commander/weapon stations. The weapon stations/operational mock up will be tested at Aberdeen Proving Grounds from March to July 1996. The AAHV program office has initiated significant modeling and simulation efforts with the University of Iowa, University of Central Florida, Lawrence Livermore, and the Marine Corps Modeling and Simulation Office. On March 17, 1995 the AAHV program received it Defense Acquisition Board (DAB) approval to enter Demonstration/Validation (Dem/Val).

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7a. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --

Both contractors successfully completed land mobility testing of their full-scale Automotive Test Rigs (ATR) at Aberdeen Proving Grounds (APG). Both contractors have completed fabrication of operational mockups of their weapon stations. Testing is scheduled to begin at APG during March 1996. Both contractors submitted their initial proposals for Demonstration/Validation phase on 29 Sept 1995. On 30 September 1995 OSD issued Program Decision Memorandum (PDM) II which provided an additional \$107 Million throughout FY97-FY01, and directed that Dem/Val phase be accelerated, shortened by nine (9) months. Since PDM II was issued one day after submittal of the Dem/val proposals, both contractors have been required to revise their proposals to incorporate the PDM II changes.

c. Changes Since As Of Date --

Both contractors resubmitted their Dem/Val proposals on 28 February 1996. Due to this revision, and the Federal Government furlough and lost snow days. Dem/Val award has been changed from April 1996 to May 1996. This system will satisfy mission requirements.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline (APB) dated March 17, 1995. In accordance with Section 2433, Title 10, USC, Nunn-McCurdy Unit Cost Reporting is not required for pre-milestone II programs.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I DAB Review	MAR 95	MAR 95	MAR 95
Dem/Val Contract Award	FEB 96	FEB 96	MAY 96 (Ch-1)
AAAV(P) Prototype Delivery	OCT 00	OCT 00	JAN 00 (Ch-2)
Development Test (DT1)			
Start	OCT 00	OCT 00	JAN 00 (Ch-2)
Complete	JUN 01	JUN 01	OCT 00 (Ch-2)
Operational Test (OT1/EDA)			
Start	JUN 01	JUN 01	OCT 00 (Ch-2)
Complete	OCT 01	OCT 01	JAN 01 (Ch-2)
Milestone II DAB Review	JAN 02	JAN 02	APR 01 (Ch-3)
Award of E&MD Contract	FEB 02	FEB 02	MAY 01 (Ch-2)
EMD Prototype Deliveries			

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
EMD Prototype Deliveries			
Start	OCT 04	OCT 04	JUN 03 (Ch-2)
Complete	MAR 05	MAR 05	OCT 03 (Ch-2)
Developmental Testing II			
Start	NOV 04	NOV 04	JUL 03 (Ch-2)
Complete	SEP 06	SEP 06	JUN 05 (Ch-2)
Award of LRIP	JUL 05	JUL 05	JAN 04 (Ch-2)
LRIP Vehicle #1 Delivery	JAN 07	JAN 07	JUL 05 (Ch-2)
IOT&E			
Start	JAN 07	JAN 07	SEP 05 (Ch-2)
Complete	JUL 07	JUL 07	APR 06 (Ch-2)
Live Fire Testing (LFT&E)			
Start	JAN 06	JAN 06	JUN 04 (Ch-2)
Complete	JAN 07	JAN 07	JUN 05 (Ch-2)
Milestone III DAB Review	OCT 07	OCT 07	APR 06 (Ch-2)
IOC	DEC 07	DEC 07	JUN 06 (Ch-2)
Full Rate Production Deliveries Start	JUL 09	JUL 09	JAN 08 (Ch-2)
Organic Support Capability	MAY 10	MAY 10	JUN 09 (Ch-2)
Service Depot Support	MAY 10	MAY 10	JUN 09 (Ch-2)
FOC	MAY 14	MAY 14	DEC 12 (Ch-2)

Note: Some dates are subject to change after award of the Demonstration Validation Phase Contract to the Contractor's schedule.

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) the Dem/Val contract award date was changed from Apr 96 to May 96 due to Federal Government furlough and snow days causing the source selection meetings to be rescheduled.

(Ch-2) Program Decision Memorandum (PDM) 2, signed 30 September 1995 stated the following; "(U) Navy, Marine Corps, Provide additional funding as shown below to accelerate Initial Operational Capability to FY2007." \$107M spread from FY97-01. This allowed shortening the design phase and the time for fabrication of the Dem/Val prototype. The net result was a nine (9) month acceleration, or shortening, of the Dem/Val phase.

(Ch-3) Milestone II DAB Review was changed from Jan 02 to Jun 01 due to the PDM 2 acceleration of the program.

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9d. Schedule (Cont'd):

d. References --

Planning Estimate:

Approved Acquisition Program Baseline dated March 17, 1995.

Approved Program:

Approved Acquisition Program Baseline dated March 17, 1995.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
High Water Speed (kts) (SS-3, 36 in SWH)	25	25 / 20	TBD	*20
Forward Speed on a Hard Surface Road (kph)	72	72 / 69	TBD	*69
Armor Protection Against (mm/m)	30/1000	30/1000 / 14.5/300	TBD	*14.5/ 300
Carry Capacity (Marines)	18	18 / 17	TBD	*17
Firepower (M) (MER)	2000	2000 / 1500	TBD	*1500
Reliability (hrs) MTBCMF	95	95 / 70	TBD	*70

*Performance Characteristics reflect JROC approved key performance parameters, dated 27 Feb 95.

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

Approved Acquisition Program Baseline dated March 17, 1995.

Approved Program:

Approved Acquisition Program Baseline dated March 17, 1995.

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11. Total Program Cost and Quantity (Current Estimate in Millions of Dollars):

a. Cost --	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	725.0	725.0	777.9
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	725.0	725.0	777.9
 Escalation	 209.1	 209.1	 156.2
Development (RDT&E)	(209.1)	(209.1)	(156.2)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	934.1	934.1	934.1

Note: Program Decision Memorandum II provided additional funding in the amount of \$107 million from FY97-01 to accelerate the program nine (9) months to shorten the Dem/Val phase. Congress increased AAAV Program \$6.0 million in FY96 for Engine Development and system technical risk reduction. OSD marked (decremented) the FY96 President's Budget \$2.1 million. In addition, OSD issued programmatic marks against FY97-01 (as augmented by PDM II) decreasing funds by \$18.8 million. Total decrement \$20.9 million Potential schedule impact has not been determined.

b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	0	0	0

Note: Excludes 12 RDTE prototypes from the SAR Baseline and 12 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:
Approved Acquisition Program Baseline dated March 17, 1995.

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11e. Total Program Cost and Quantity (Cont'd):

Approved Program:

Approved Acquisition Program Baseline dated March 17, 1995.

12. Unit Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	934.1	0.0	0.0	934.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-60.8	-	-	-60.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	60.8	-	-	+60.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.0	-	-	+0.0
Total Changes	+0.0	-	-	+0.0
Current Estimate	934.1	-	-	934.1

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	725.0	0.0	0.0	725.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-7.3	-	-	-7.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-7.3	-	-	-7.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	60.2	-	-	+60.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+60.2	-	-	+60.2
Total Changes	+52.9	-	-	+52.9
Current Estimate	777.9	-	-	777.9

b. Previous Change Explanations --

RDT&E

Estimating: Adjustment to reflect revised economic assumptions.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A

-60.8

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Congressional and budget increased to accelerate the Demval Phase. (Estimating)	+59.0	+59.7
RDT&E Subtotal	<u>+60.0</u>	<u>0.0</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information:

No active large contracts over \$40M.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 16.7% (2 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 6.4% (\$59.9 / \$934.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	23.6	36.3	40.1	834.1	934.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	23.6	36.3	40.1	834.1	934.1

AAAV, December 31, 1995

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1995				22.4	23.6	23.6	18.4	1.9
1996				33.7	36.3	4.5	1.5	2.0
1997				36.5	40.1			2.2
1998				53.5	60.2			2.2
1999				90.5	104.1			2.3
2000				79.0	92.8			2.2
2001				91.9	110.4			2.2
2002				121.2	148.8			2.2
2003				137.7	172.8			2.2
2004				61.6	79.0			2.2
2005				32.4	42.5			2.2
2006				17.5	23.5			2.2
2007								2.2
Subtot				777.9	934.1	28.1	19.9	
Grand Total				777.9	934.1	28.1	19.9	

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17. Production Rate Data:

- a. Deliveries (Plan/Actual) -- None.
- b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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N-17 NSSN
7/7

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: NEW ATTACK SUB

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
New SSN/NEW ATTACK SUBMARINE

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:
NEW ATTACK SUBMARINE PROGRAM OFFICE CAPT DAVID BURGESS
PEO SUBMARINES Assigned: November 17, 1993
2531 JEFFERSON DAVIS HIGHWAY AV 332-3700 COMM (703) 602-3700
ARLINGTON, VA 22242-5168

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0604558N, 0603561N, 0604567N, 0603564N, 0603570N

PROCUREMENT:

APPN 1611 ICN 201300 (Navy)
APPN 1810 ICN 276200 (Navy) (Shared)
APPN 1611 ICN 201310 (Navy)

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28 MAR 1996

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A. O. 117 (REV. 12-14-84)
EXEMPT FROM GDS

96-c-0448

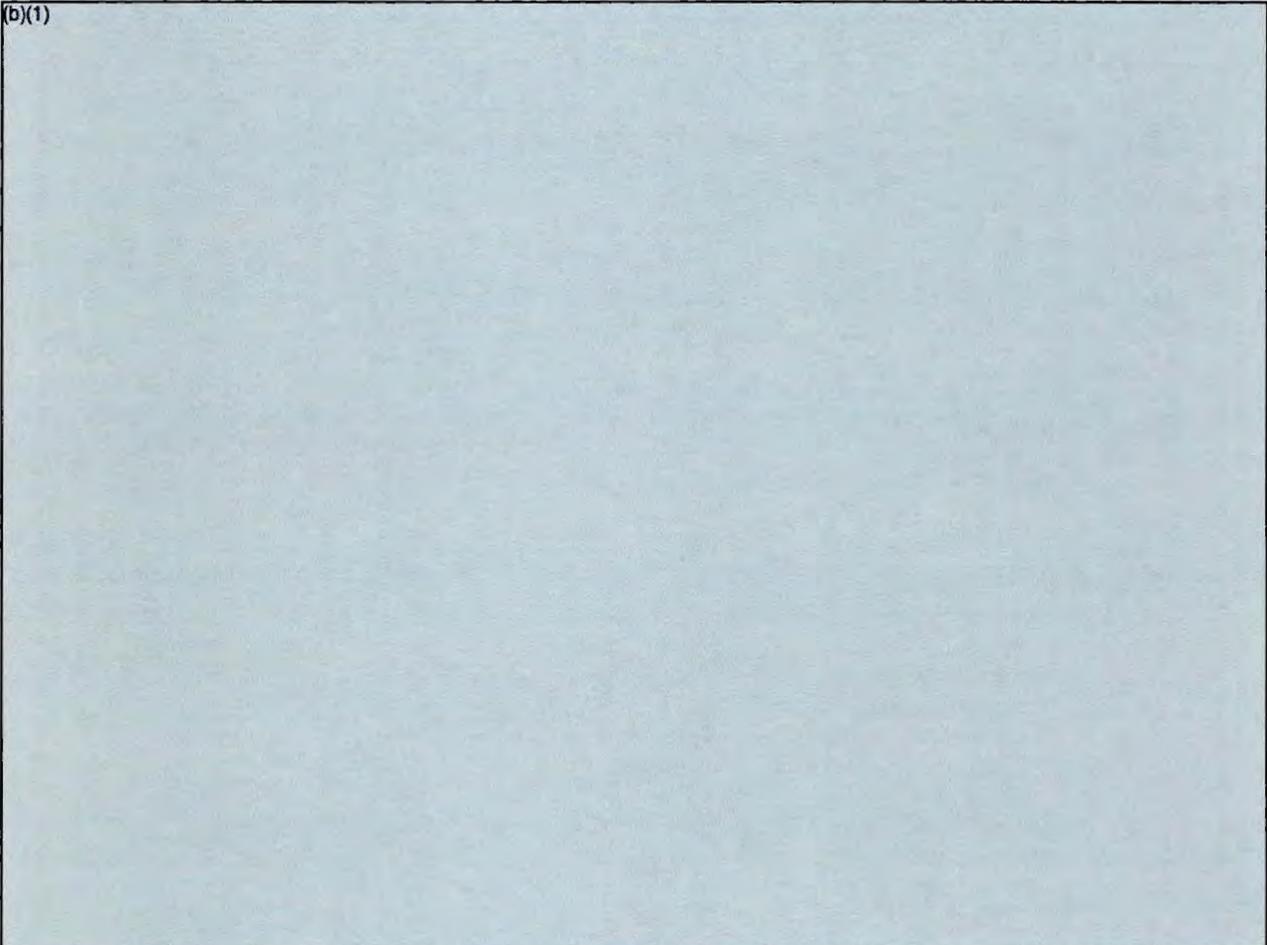
5. (U) Related Programs:

NSSN Command, Control, Communications and Intelligence Program
NSSN Reactor Plant

6. (U) Mission and Description:

The New Attack Submarine Program is bringing forward a critical national security asset designed to flexibly address the unique multi-mission requirements of the post-Cold War era. Capable of performing traditional submarine missions, dominating the littoral battlespace and adapting to future requirements, the New Attack Submarine will satisfy any assigned role well into the Twenty-First Century. Intended to replace the fleet of SSN 688 Class submarines ending service in large numbers early next century, the New Attack Submarine is characterized by state-of-the-art stealth, enhanced features for special operations forces, and cost effective Command, Control, Communication and Intelligence capability. With an array of armament including the MK48 (ADCAP) torpedo and cruise missile vertical launch capability, the New Attack Submarine maintains total undersea superiority at an affordable cost.

(b)(1)



7a. ~~(S)~~ Program Highlights (Cont'd):

b. (U) Significant Developments Since Last Report --
 In response to USD (A&T) direction to "rebaseline" all ACAT 1D programs under the new IPT initiatives, the program convened its first Integrating IPT (IIPT) meeting with representatives from various OSD and Navy offices in December 1995.

c. (U) Changes Since As Of Date --
 A letter contract for Integrated Product and Process Development was signed on January 29, 1996. Negotiations for the definitization of the contract are ongoing and are expected to be complete in the second quarter of FY96. The Department is preparing a plan to be released to Congress in March 1996 reflecting changes required to support competition.

8. (U) Threshold Breaches:

There are no breaches to the approved APB dated June 30, 1995. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone 0	AUG 92	AUG 92	AUG 92
Milestone I	AUG 94	AUG 94	AUG 94
Milestone II	JUN 95	JUN 95	JUN 95
New Attack Submarine Integrated Product and Process Development Contract Award	OCT 95	OCT 95	JAN 96
Program Review (LRIP)	SEP 97	SEP 97	SEP 97
Organizational Support (by Fast Cruise)	APR 04	APR 04	APR 04
Lead Ship Delivery	JUN 04	JUN 04	JUN 04
LPT&E Shock Tests	OCT 04	OCT 04	OCT 04
Initial Operational Test & Evaluation Start	JUL 04	JUL 04	JUL 04
Complete	OCT 04	OCT 04	OCT 04
IOC (Lead Ship)	OCT 05	OCT 05	OCT 05
Intermediate Support (by IOC)	OCT 05	OCT 05	OCT 05
Milestone III	OCT 07	OCT 07	OCT 07
Depot Shipyard Support	AUG 15	AUG 15	AUG 15
Related Programs			
NSSN COMMAND AND CONTROL SYSTEM			
FY95 Open Architecture Demo Complete	OCT 95	OCT 95	SEP 95
C&CS Module Start Fabrication	JUN 99	JUN 99	JUN 99

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
GFE C&CS Delivered to Shipyard	DEC 00	DEC 00	DEC 00
LBTS Integration and Test Complete	APR 02	APR 02	APR 02
C&CS Module delivered to ship	MAY 02	MAY 02	MAY 02

(b)(1)

*The New Attack Submarine Program Office is tracking the six year earlier delivery of the MK-48 ADCAP weapon system.

b. (U) Previous Change Explanations --

The projected award date of the IPPD96 Design/Build contract slipped from OCT 95 to JAN 96 as the effects of the congressional deliberations over the FY96 Defense Authorization and Appropriations Bills, and the likely introduction of Newport News Shipbuilding (NNS) into the New Attack Submarine program were being considered.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

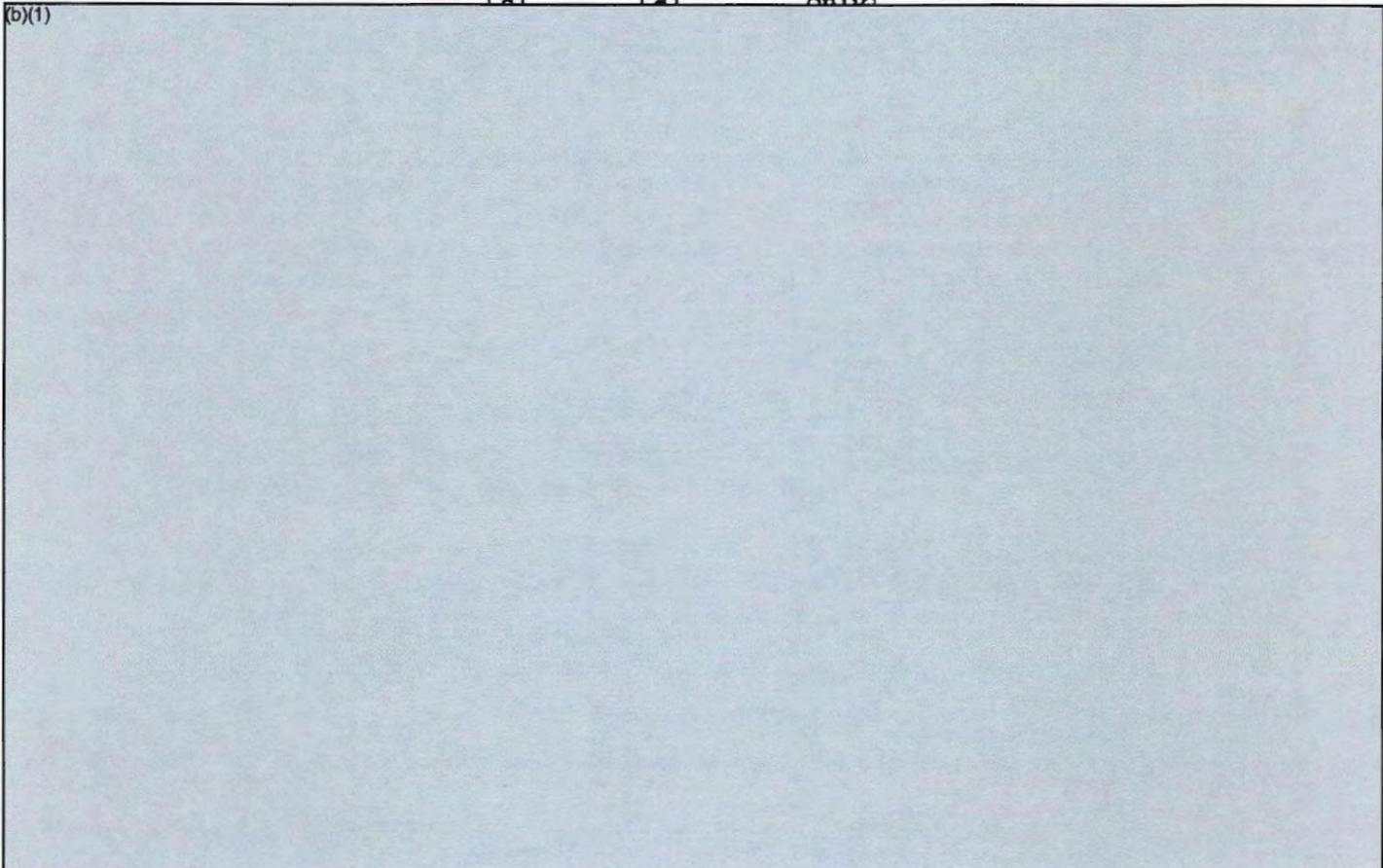
(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Radiated Noise					
Broadband Noise					
5 and 10 knots (prior to installation of hull coating)	Figure A.1 (Except in Port and casualty	Figure A.1 (Except in Port and casualty	/ Figure A.1 (Except in Port and casualty as noted below)	TBD	Figure A.1
Greater than or equal to 15 knots	Figure A.1 (All horizontal	Figure A.1 (All horizontal	/ Figure A.1 (beam aspect only)	TBD	Figure A.1

(b)(1)



10a. (U) Performance Characteristics (Cont'd):

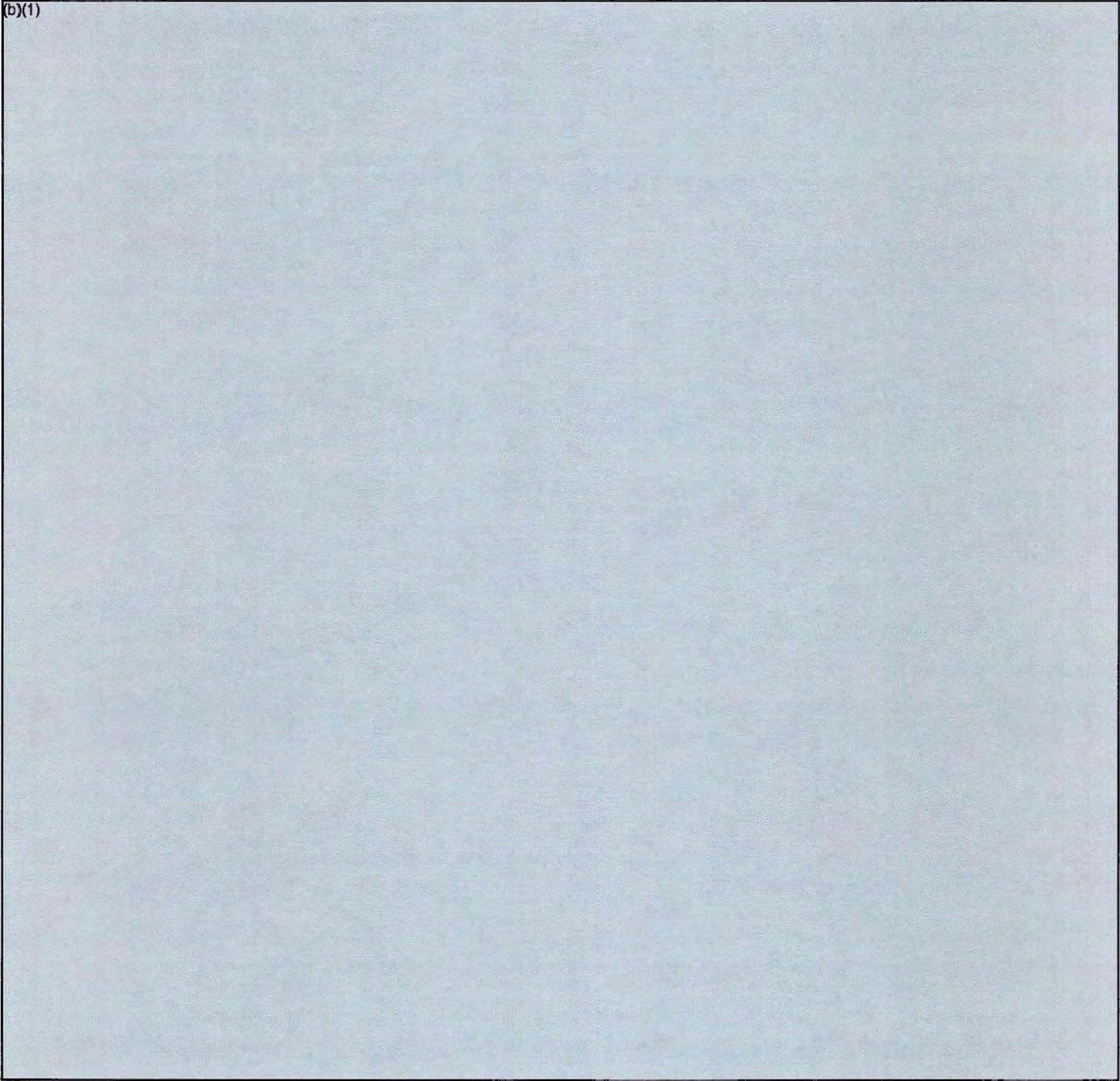
	Approved Program	Demon- strated	Current
<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>
(b)(1)			

NEW ATTACK SUB, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

Approved Program	Demon- strated	Current
---------------------	-------------------	---------

(b)(1)



10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)	[Redacted]			

b. (U) Previous Change Explanations --

The program will perform trade analyses to determine and obtain the proper balance between cost and performance throughout the life of the program.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	3405.0	3405.0	3431.5
Procurement	42228.1	42228.1	44124.1
Flyaway	(42130.9)		(44016.2)
Other Wpn System Costs	(16.5)		(51.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(80.7)		(56.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	45633.1	45633.1	47555.6
Escalation	25447.7	25447.7	17335.8
Development (RDT&E)	(409.0)	(409.0)	(295.6)
Procurement	(25038.7)	(25038.7)	(17040.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	71080.8	71080.8	64891.4

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11b. (U) Total Program Cost and Quantity (Cont'd):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>30</u>	<u>30</u>	<u>30</u>
Total	30	30	30

Note--An LRIP quantity not to exceed 14 New Attack Submarines was assigned at Milestone II by USD (A&T). The New SSN acquisition profile builds 1 or 2 ships per year for a total quantity of 30 ships and supports the JCS requirements for attack submarine force levels. The length of time from start of construction through operational testing for the lead ship is approximately nine years. A delay of this length between the first and second ships would neither support force level requirements nor sustain the fragile submarine industrial base.

c. (U) Foreign Military Sales/International Cooperative Programs -- None

d. (U) Nuclear Costs -- N/A

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated June 30, 1995.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JUN 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY95\$)	47555.6	45633.1	
(2) Quantity	30	30	
(3) Unit Cost	1585.19	1521.10	4.21

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY95\$)	44124.1	42228.1	
(2) Quantity	30	30	
(3) Unit Cost	1470.80	1407.60	4.49

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3814.0	67266.8	0.0	71080.8
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	-23.9	-	-25.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-23.9	-	-25.1
Current Changes:				
Economic	-122.1	-7050.5	-	-7172.6
Quantity	-	-	-	-
Schedule	-	96.4	-	+96.4
Engineering	-	-	-	-
Estimating	36.4	857.8	-	+894.2
Other	-	-	-	-
Support	-	17.7	-	+17.7
Subtotal	-85.7	-6078.6	-	-6164.3
Total Changes	-86.9	-6102.5	-	-6189.4
Current Estimate	3727.1	61164.3	-	64891.4

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	3405.0	42228.1	0.0	45633.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	+1281.9	-	+1280.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	+1281.9	-	+1280.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	88.6	-	+88.6
Engineering	-	-	-	-
Estimating	27.7	514.8	-	+542.5
Other	-	-	-	-
Support	-	10.7	-	+10.7
Subtotal	+27.7	+614.1	-	+641.8
Total Changes	+26.5	+1896.0	-	+1922.5
Current Estimate	3431.5	44124.1	-	47555.6

b. (U) Previous Change Explanations --

RDT&E

Estimating: Refined Cost Estimates

Procurement

Estimating: Adjustment resulted from deleting contract escalation.

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13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)		-122.1
Revised estimates for Hull, Mechanical and Electrical Pre-planned Product Improvements and Command, Control, Communications and Intelligence for technology updates. (Estimating)	+27.7	+36.4
RDT&E Subtotal	<u>+27.7</u>	<u>-85.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)		-7050.5
The FY96 Appropriations Act added \$100M for advance procurement in FY96 for the second NSSN to be built by Newport News Shipbuilding with authorization anticipated in FY99. (Schedule)	+88.6	+96.4
Revised estimate in support costs (trainers and spares) (Support)	+10.7	+17.7
Revised estimate to offset excessive decreases in inflation indices. (Estimating)	+514.8	+857.8
Procurement Subtotal	<u>+614.1</u>	<u>-6078.6</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2369.4	-239.1	--	3.2	--	29.0	--	0.6	-206.3	2163.0

Note--This PAUC is consistent with the Fifth Ship cost metric most recently reported to Congress in the Fourth Quarterly Cost and Schedule Report of \$1.55B (BY95\$).

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15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --			Initial Contract Price		
(U) <u>Design Studies IPPD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, EB Corp, Groton, CT					
N00024-95-C-2103, CPFF			\$439.2	\$0.0	0
Award: February 21, 1995					
Definitized: February 21, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$439.2	\$0.0	0	\$439.2	\$439.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			N/A	N/A	
Net Change			<u>N/A</u>	<u>N/A</u>	
			\$0.0	\$0.0	

Explanation of Change: None.

This is a level of effort type contract with cost reporting at the task level.

b. (U) Procurement --			Initial Contract Price		
(U) <u>IPPD96 Letter Contract:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Gen Dyn, EB Corp,, Groton, CT					
N00024-95-C-2100, CPFF			\$1449.7	\$1449.7	0
Award: January 29, 1996					
Definitized: N/A					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$1449.7	\$1449.7	0	\$0.0	\$0.0	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date			N/A	N/A	
Net Change			<u>N/A</u>	<u>N/A</u>	
			\$0.0	\$0.0	

Explanation of Change: None.

Note--A letter contract (IPPD96) was awarded on January 29, 1996 with contract definitization anticipated in the second quarter of FY96. The initial contract price equates to the current contract price. The estimated cost plus fixed fee amount will change upon definitization of the contract. The Program Manager's estimates have been omitted because disclosure could jeopardize the ongoing negotiation process. CSCSC is a requirement of this contract and will be fully invoked upon adjudication of the contract.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 17.2% (5 yrs/29 yrs)
- (2) Percent Program Cost Appropriated: 3.3% (\$2125.8 / \$64891.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2020)	<u>Total</u>
RDT&E	910.0	440.6	487.6	1888.9	3727.1
Procurement	-	775.2	296.2	60092.9	61164.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	910.0	1215.8	783.8	61981.8	64891.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1996		142.0		712.3	775.2	452.0		2.0
1997		206.5		266.2	296.2			2.2
1998	1	723.1	1849.3	2376.3	2702.1			2.2
1999				468.1	544.0			2.3
2000	1		1773.0	1599.4	1899.8			2.2
2001				936.4	1136.7			2.2

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

2002	2		3402.7	3058.3	3794.1			2.2
2003	2		2922.9	2877.1	3647.9			2.2
2004	2		2854.4	2830.7	3668.0			2.2
2005	2		2823.5	2757.7	3652.0			2.2
2006	2		2799.7	2797.7	3786.7			2.2
2007	2		2779.1	2802.6	3876.6			2.2
2008	2		2762.1	2785.4	3937.7			2.2
2009	2		2747.8	2770.8	4003.3			2.2
2010	2		2734.3	2757.4	4071.3			2.2
2011	2		2721.2	2744.2	4141.0			2.2
2012	2		2709.2	2732.2	4213.6			2.2
2013	2		2698.4	2721.1	4289.0			2.2
2014	2		2688.1	2003.7	3227.5			2.2
2015	2		2678.9	1598.3	2631.3			2.2
2016				98.7	166.0			2.2
2017				98.7	169.7			2.2
2018				98.7	173.4			2.2
2019				98.7	177.2			2.2

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

2020				25.5	46.8			2.2
Subtot	30	1071.6	42944.6	44016.2	61027.1	452.0		

Note--The FY96 Appropriations Act added \$100M for advance procurement for the second NSSN.

Appropriation: 1810 Other Procurement, Navy

2002				58.8	73.0			2.2
2003				18.9	23.9			2.2
2004				4.2	5.5			2.2
2005				13.7	18.1			2.2
2006				12.3	16.7			2.2
Subtot				107.9	137.2			
Navy	30	1071.6	42944.6	44124.1	61164.3	452.0		

Appropriation: 0400 RDT&E, Defense Agencies

1992				23.9	22.8	22.8	22.8	2.8
1993				67.9	66.3	66.3	64.9	2.7
1994				367.2	365.3	365.3	345.6	2.0

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 0400 RDT&E, Defense Agencies (Cont'd)

1995				449.2	455.6	453.4	351.3	1.9
1996				425.5	440.6	279.2	26.4	2.0
1997				460.7	487.6			2.2
1998				420.2	454.7			2.2
1999				268.5	297.1			2.3
2000				204.5	231.3			2.2
2001				197.2	227.9			2.2
2002				119.8	141.5			2.2
2003				108.4	130.8			2.2
2004				78.8	97.2			2.2
2005				83.8	105.7			2.2
2006				113.9	146.8			2.2
2007				22.7	29.9			2.2
2008				19.3	26.0			2.2
Subtot				3431.5	3727.1	1187.0	811.0	
DoD				3431.5	3727.1	1187.0	811.0	
Grand Total	30	1071.6	42944.6	47555.6	64891.4	1639.0	811.0	

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17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

Operations and Support (O&S) costs are developed at the ship level, on an annual cost per ship basis by cost category and appropriation, with total and annual average cost over the submarine's expected service life. Costs are estimated for all categories listed in the CAIG O&S Cost Estimating Guide utilizing historical data from operating submarine classes. Maintenance and Personnel costs are the major contributors to the total O&S Program. The source of this cost estimate is the New Attack Submarine Milestone II Program Life Cycle Cost Estimate of June 1995.

- b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Ship	
Mission Personnel	5.3	N/A
Unit Level Consumption	2.9	N/A
Intermediate Maintenance	2.0	N/A
Depot Maintenance	13.0	N/A
Contractor Support	0.0	N/A
Sustaining Support	3.1	N/A
Indirect Support	5.6	N/A
	0.0	N/A
	0.0	N/A
Total	31.9	N/A

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18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- None.

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AF-5 CMU

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: CMU

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Cheyenne Mountain Upgrade (CMU)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ESC/SR	COL ROBERT H. LATIFF
50 GRIFFISS STREET	Assigned: October 10, 1995
HANSCOM AFB, MA 01731-1622	AV 478-1186 X5020
COMM (617) 271-5020	

4. (U) Program Elements/Procurement Line Items:

EDT&E:

FE 0102310F, 0305906F (Shared)

PROCUREMENT:

APPN 3080 ICN 833160 (Air Force)

APPN 3080 ICN 837908 (Air Force) (Shared) Spares

96-5-133

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5. (U) Related Programs:

ITW/AA, BMEWS, RAVE PAWS, SSNIP, ASAT, SPADCCS, DSP, NWS, BMD, AFAMPE, ATWC, JRSC, MILSTAR, JSS, ROCC/SOCC, ASPADOC, IDHS, COBRA DANE, WADS, SEEK IGLOO, FAHR.

6. (U) Mission and Description:

The CMU program develops system capabilities to ensure fully capable, timely and reliable day-to-day processing of all tactical warning mission data for atmospheric, ballistic missile and space threats. These capabilities must endure natural or man-made disturbances, jamming, sabotage and other effects to ensure the availability of Integrated Tactical Warning and Attack Assessment (ITW/AA) information in peacetime and through a conflict until physically destroyed. The capacity of the CMU "system of systems" and their interfaces is sufficient to handle both single event, and small and large scale raids. It also provides credible warning data to all U.S. forces and the National Command Authorities (NCA). Transmission of missile warning sensor messages to the Cheyenne Mountain AFB (CMAFB) and the Alternate Processing and Correlation Center (APCC), and forward fixed users is processed by the Survivable Communications Integration System (SCIS) equipment. Warning messages from air and intelligence sources are transmitted to the CMAFB correlation center directly. Space warning data is provided to CMAFB through Space Defense Operation Center (SPADOC) and Alternate SPADOC at Dahlgren Naval Space Surveillance Center. Messages are routed through the Communications System Segment Replacement (CSSR) and passed to the mission centers. These mission centers (SPADOC for CMAFB only), Air Defense Operations Center (ADOC), and the Missile Warning Center (MWC) use the Command Center Processing and Display System Replacement (CCPDS-R) and Granite Sentry to process the information and generate displays critical to decision makers.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The 1989 Defense Appropriations Act directed a consolidation of six ongoing development programs under the Cheyenne Mountain Upgrade (CMU) program. These programs were being developed to correct deficiencies in the existing communications, processing, and display systems within the Integrated Warning and Attack Assessment (ITW/AA) system. The Defense Acquisition Board (DAB) approved the consolidated acquisition and integration approach in September 1989 and the Defense Acquisition Executive approved the Acquisition Program Baseline (APB) on 12 February 1990. This phased acquisition called for incremental deliveries of capability for space defense, air warning, missile warning, communications and message processing elements.

In the early 1990's, all CMU elements achieved some successes as measured against the APB. However, in 1993 significant resource

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7a. (U) Program Highlights (Cont'd):

contention problems impacted the program's ability to conduct development testing while supporting operational needs. Shortages of available hardware, manpower and test time overstressed the capabilities of the Cheyenne Mountain Complex (CMC) community to conduct the operational mission and testing simultaneously. In March 1994, the CMU Program declared a formal breach of its APB schedule.

Beginning in early 1994, independent reviews of the CMU program were conducted by a SA/PAQ "red team", an independent SA/PAQ sponsored "Senior Review Team", and by the GAO. These efforts combined to produce a complete replanning of the remaining CMU acquisition effort. It rebaselined CMU acquisition milestones into mission oriented phase milestones, scheduled operational assessments on the Air and Space Warning subsystems, and provided dedicated operational testing. The Replan required an increase in the CMU 3600 appropriation by \$48M and added 36 months to the CMU program schedule. The Air Force Acquisition Executive approved the restated APB on 24 September 1994.

Phase I program content includes Command Center Processing and Display System - Replacement (CCPDS-R) single string, Survivable Communications Integration System (SCIS) mini-net, Strategic Summary Displays, Space Defense Operations Center (SPADOC) 4C Version 2 with the Communications System Segment and the Alternate Processing and Correlation Center (APCC) (Missile Warning Mission capability). Subsequent phase will be delivered approximately every twelve months. Phases I through IV constitute the total CMU Program.

b. (U) Significant Developments Since Last Report --
Operational Acceptance of the APCC and the United States Strategic Command-unique system occurred in Sep 95. SCIS Phase 1 and Phase 2A sites were operationally accepted in Sep 95. These events concluded all CMU APB Phase I activities on 13 Sep 95, 78 days ahead of schedule.

The CMU program remains on track to meet its APB Phase II milestones. An exhaustive Missile Warning IOT&E (MW IOT&E) is planned to begin in late April 1996. All acquisition activities currently support the ability to enter this testing phase. APB Phase II requirements include Vertical Release (VR) 96V-1, which includes ITW/AA failover and Strategic Summary Displays. VR96-1 is on schedule for operations acceptance in early April 96. CCPDS-R APB Phase II requires processing and display subsystems at five sites. Operational acceptance at one site has occurred, and schedules for the remaining sites support the start of MW IOT&E. SCIS APB Phase II requirements include Version 4 software operational at nine sites. This software is undergoing operational assessment and is scheduled

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7b. (U) Program Highlights (Cont'd):

to complete test review in early April 96.

NW IOT&E is scheduled from late April 96 to late July 96. Following NW IOT&E, there is an approximate one month period allowed for a Joint Reliability, Maintainability Evaluation Team assessment and a general officer Operations Approval Board. CMU APB Phase II schedule remains on track to meet its mid-August 96 operational acceptance, within the threshold value of December 96.

A revised Acquisition Program Baseline (APB) was submitted 20 Nov 95 to reflect the performance parameters based on the 1995 CMU Operations Requirements Document (ORD), dated 23 Aug 95. The ORD deleted all previous parameters that were based on the CMU System Operational Requirements Document (SORD, dated 9 Sep 92) and replaced them with new key parameters that are more representative of operational requirements vice system specification requirements. In addition, based on additional requirements to implement Survivable Secure Communications Network (SSCN) into the Mobile Consolidated Command Center (MCCC) and the Mobile Ground Terminals (MGT), the SSCN portion of the CMU Phase II schedule was shifted to CMU Phase III. The APB was signed by the AFAC 25 Jan 96.

The Air Force Acquisition Executive approved the Test and Evaluation Master Plan (TEMP) 27 Nov 95. AF/DO&E signed the TEMP 18 Jan 96.

This system will satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the AFAC approved Acquisition Program Baseline (APB) dated 25 Jan 96. There is no Nunn-McCurdy unit cost breach.

9. (U) Schedule:

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Granite Sentry Phase II	MAR 90	N/A	N/A
Granite Sentry (Phase III) (Missile & Space Wing)	MAR 91	DEC 91	DEC 91

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
SPADOC 4B IOC	APR 91	JUL 91	JUL 91
CSSR Tech Control & Message Processing	APR 91	N/A	N/A
Granite Sentry (Missile Wrng) IOC	N/A	DEC 91	DEC 91
Granite Sentry (MCC) IOC	N/A	DEC 91	DEC 91
Granite Sentry Phase IVA IOC	MAR 92	N/A	N/A
SCIS Installation/Checkout Complete	MAR 92	N/A	N/A
CCPDS-R Missile Warning (Common Subsystem) IOC	SEP 93	N/A	SEP 94
CSSR Operational Date (Blck Tech Control)	N/A	SEP 93	FEB 94
Granite Sentry Phase IVB	SEP 93	N/A	N/A
Granite Sentry Phase V	MAR 94	N/A	N/A
CSSR P3I	SEP 94	N/A	N/A
CSSR Installation Complete (APCC)	N/A	SEP 94	FEB 94
SCIS (Additional Media)	DEC 94	N/A	N/A
OPCC Missile Warning	DEC 94	N/A	N/A
CCPDS-R (SAC Force Management) IOC	DEC 94	N/A	N/A
Granite Sentry Phase VI IOC	MAR 95	N/A	N/A
SPADOC 4C IOC	SEP 95	N/A	N/A
OPCC (Air Warning/CCP) IOC	DEC 95	N/A	N/A
Systems of Systems IOT&E	DEC 95	N/A	N/A
System Turnover/P3IRT	SEP 96	N/A	N/A
CMU Phase I Delivery	N/A	NOV 95	SEP 95 (Ch-1)
CMU Phase II Delivery	N/A	APR 96	AUG 96 (Ch-2)
Missile Warning IOT&E	N/A	JUN 96	AUG 96 (Ch-2)
CMU Phase III Delivery	N/A	APR 97	APR 97
Air Warning OA	N/A	JUN 97	JUN 97
CMU Phase IV Delivery	N/A	APR 98	APR 98
Space Warning OA	N/A	JUN 98	JUN 98
Integrated Mission IOT&E	N/A	MAR 99	MAR 99

ACRONYMS

- APCC Alternate Processing and Correlation Center
- CCP Command Center Processor
- CCPDS-R Command Center Processing and Display System Replacement
- CMU Cheyenne Mountain Upgrade
- CSSR Communications System Segment Replacement
- CCC NORAD Command Center
- OPCC Offutt Processing and Correlation Center
- P3I Pre-Planned Product Improvement
- SAC Strategic Air Command
- SCIS Survivable Communications Integration System

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9b. (U) Schedule (Cont'd):

b. (U) Previous Change Explanations --

Granite Sentry (Missile Warning) IOC and Granite Sentry (MCC) IOC completed IOT&E with no significant problems and entered Trial Period on schedule in Aug 91. During Trial Period, an operational concern with the control for system switchover during planned and unscheduled maintenance was discovered. The main cause was a lack of System Controller familiarity with Granite Sentry equipment. Granite Sentry Missile Warning and MCC reached IOC on 19 Dec 91. (System Control is a separate existing center in Cheyenne Mountain.)

The SCIS schedule rephasing was planned in our original DAB baseline (two years of internal schedule reserve were included). This slip, based on the poor contractor performance, was recognized in our baseline planning to include the necessary funding and time to resolve all interface issues. Due to an oversight on our part, this was not reflected in the DAB documentation. The replacement milestone to monitor is SCIS IOC.

Granite Sentry (Phase III) (Missile and Space Warning) changed from N/A to Dec 91 to reflect the actual date of completion.

Granite Sentry Completion was adjusted from Nov 95 to Jun 95 due to negotiations with the prime contractor Martin Marietta Co (MMC).

SPADOC 4C IOC changed from Aug 95 to Sep 95 to correct an administrative error in the 31 Dec 91 SAR.

OPCC has been renamed APCC. The schedule information for OPCC (Air Warning/CCP) IOC will now be tracked under the milestone called APCC (Air Warning/CCP) IOC.

CMU is an upgrade of an existing system. Under the new Air Force Materiel Command, System Turnover/PMET is no longer required. Therefore, this item has been deleted from APB.

CCPDS-R Missile Warning (Common Subsystem) IOC was adjusted from Sep 93 to Jun 94. IOT&E was re-started 4 Jan 94 due to GPE communication network difficulties, software fixes, and operational/test considerations. IOC was declared 8 Sep 94.

CSSR Operational Date (Blck Tech Control) IOC was adjusted from Sep 93 to Feb 94. Delay was attributed to correction of deficiencies and required regression testing by AFOTEC. IOC was declared 9 Feb 94.

Based on the 28 September 1994 APB, the Program will be delivered

CMU, December 31, 1995

9b. (U) Schedule (Cont'd):

in Phases. SCIS Installation Checkout Complete - to be delivered in parts throughout Phases I, II and III; CCPDS-R (SAC Force Management) IOC - to be completed in Phase I; Granite Sentry Completion - to be completed in Phase III; SPADOC 4C IOC - to be completed in Phase IV; APCC (Air Warning/CCP) IOC deleted, however APCC with Missile Warning Remote is to be completed in Phase III; Systems of Systems IOT&E - to be completed as a part of Integrated Mission IOT&E; CMU FOC - to be completed as part of Integrated Mission IOT&E; SCIS IOC - to be completed in Phase II.

Additional stub items were added in the Sep 94 SAR:
CMU Phase I Delivery, CMU Phase II Delivery, Missile Warning IOT&E, CMU Phase III Delivery, Air Warning OA, CMU Phase IV Delivery, Space Warning OA and Integrated Mission IOT&E.

CCPDS-R Missile Warning (Common Subsystem) IOC was declared on 8 Sep 94.

CSSR Installation was completed at APCC 28 Feb 94.

c. (U) Current Change Explanations --

(Ch-1) CMU Phase I delivery occurred 13 Sep 95.

(Ch-2) Although the CMU program remains on track to meet its Phase II milestone, a 47 day delay to the completion of MW IOT&E has been identified. This delay is attributed to a cumulative effect of unscheduled time needed to finalize the test results of SCIS operational assessment, unscheduled post-IOT&E time to assess Joint Reliability, Maintainability Evaluation Team (JRMET) data, and unscheduled pre-coordination time to prepare for a post-IOT&E general officers Operations Approval Board.

d. (U) References --

(U) Development Estimate:

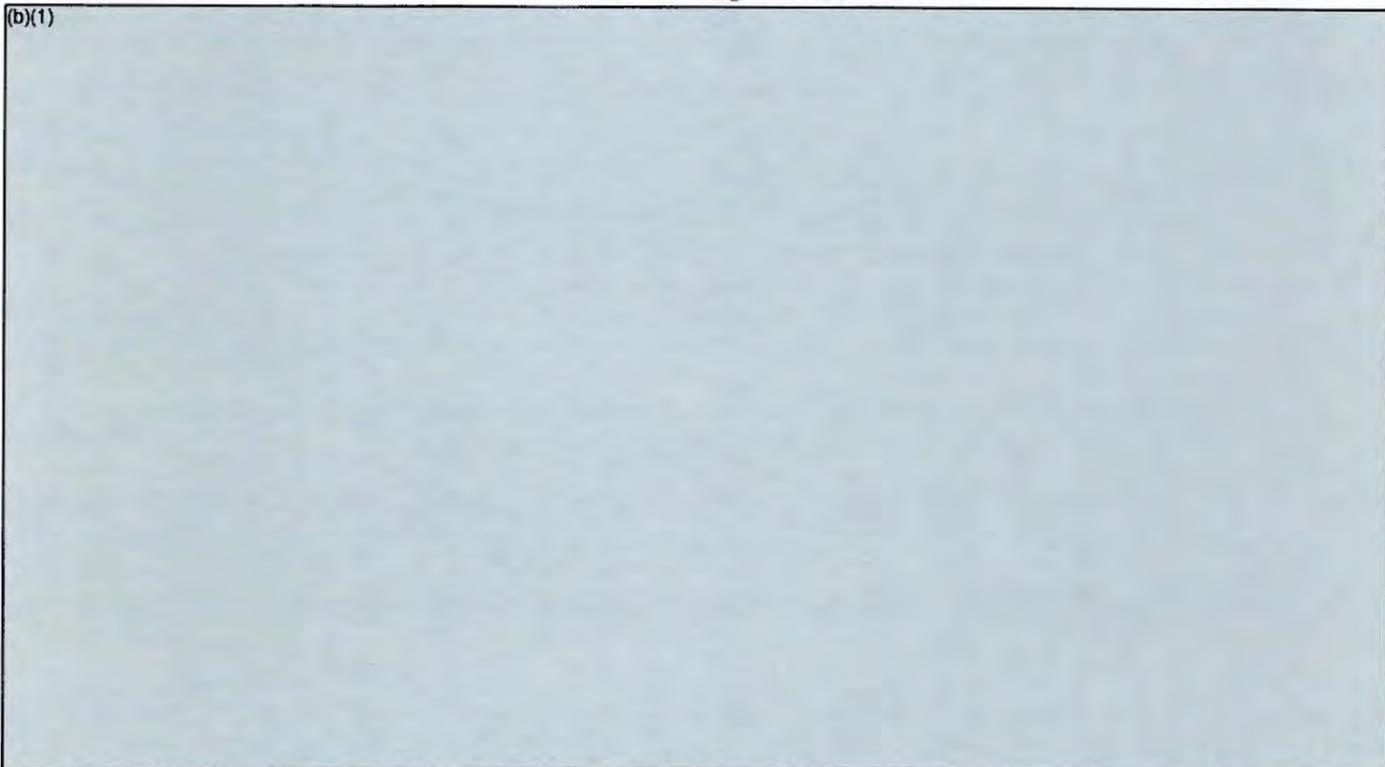
DAE approved APB dated 12 November 1989, Subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated January 25, 1996.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
-----------------------	----	--------------------------------------	-------------------	------------------



b. (U) Previous Change Explanations --

(U) Message Accountability (Missile) was changed from 10^7 to 5×10^7 to reflect the CMU Systems Operational Requirements Document (SORD) dated 7 Aug 90. Message Accountability (Missile) was changed from 10^7 to 5×10^7 in the current estimate to correct a typographical error in the 31 Dec 90 SAR submission. The current estimate deleted System Initialization, added Mean Restoral Time, added stub items for non-availability under Operational Availability, updated air under Information Delivery Time and updated Mode Change (Exercise - Real) from (sec max) to (sec 98%) to reflect the CMU approved Acquisition Program Baseline (APB) dated 3 Sep 92.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE approved APB dated 12 Nov 89, subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

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10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated January 25, 1996.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	1188.1	1230.4	1333.0
Procurement	321.2	347.6	332.0
Flyaway	(321.2)		(298.8)
Other Wpn Sys Cost	(0.0)		(10.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(22.3)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	1509.3	1578.0	1665.0
Escalation	71.7	85.0	96.4
Development (RDT&E)	(58.4)	(63.6)	(84.0)
Procurement	(13.3)	(21.4)	(12.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1581.0	1663.0	1761.4
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	1	1	1
Total	1	1	1

Since CMU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE approved APB dated 12 Nov 89, subject: Acquisition Program Baseline (APB), Cheyenne Mountain Upgrade Program.

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated January 25, 1996.

CMU, December 31, 1995

12. (U) Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	OCR Baseline (JAN 96 APR)	Percent Change
a. (U) Total Program			
(1) Cost (BY89\$)	1665.0	1578.0	
(2) Quantity	1	1	
(3) Unit Cost	1665.00	1578.00	5.51
b. (U) Procurement			
(1) Cost (BY89\$)	332.0	347.6	
(2) Quantity	1	1	
(3) Unit Cost	332.00	347.60	-4.49

CEU, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	EDT&E	PROC	MILCON	TOTAL
Development Estimate	1246.5	334.5	0.0	1581.0
Previous Changes:				
Economic	-11.4	-1.5	-	-12.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.6	-	-	+3.6
Estimating	+179.2	-28.5	-	+150.7
Other	-	-	-	-
Support	-	+50.2	-	+50.2
Subtotal	+171.4	+20.2	-	+191.6
Current Changes:				
Economic	-6.2	-1.5	-	-7.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	5.3	-0.9	-	+4.4
Other	-	-	-	-
Support	-	-7.9	-	-7.9
Subtotal	-0.9	-10.3	-	-11.2
Total Changes	+170.5	+9.9	-	+180.4
Current Estimate	1417.0	344.4	-	1761.4

CMJ, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	EDT&E	PROC	MILCON	TOTAL
Development Estimate	1188.1	321.2	0.0	1509.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	+3.0	-	-	+3.0
Estimating	+136.8	-22.7	-	+114.1
Other	-	-	-	-
Support	-	+40.2	-	+40.2
Subtotal	+139.8	+17.5	-	+157.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	5.1	0.3	-	+5.4
Other	-	-	-	-
Support	-	-7.0	-	-7.0
Subtotal	+5.1	-6.7	-	-1.6
Total Changes	+144.9	+10.8	-	+155.7
Current Estimate	1333.0	332.0	-	1665.0

b. (U) Previous Change Explanations --

EDT&E

Economic: Revised economic escalation rates. Adjustment for negative program change.

Engineering: Increase for MCP for replacement of SPADOC Megatek Consoles. Increase in engineering requirements.

Estimating: Adjustment for prior and current year escalation. Congressional adjustments to FFRDC, CAAS, and Contract Travel; and budget reductions to Air Force Operation. Reduction to out-year funding for the Defense Business Operations Fund (DBOF). General reductions for consultants and SBIR (Small Business Innovative Research). President's Budget adjustments. Withdrawal of excess funds.

CMU, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

Additional funds provided for CCFDS-R Strategic Summary Displays. Congressional adjustments to Non-FFRDC. Reduction for Special Studies to evaluate potential disconnects. Increase for CMU Replan. Inclusion of ITW/AA funds. Inclusion of Cheyenne Mountain Training System funds. Congressionally directed transfer of O&M funds to RDT&E.

Procurement

Economic: Revised economic escalation rates. Adjustment for negative program change.

Estimating: Adjustment for prior and current year escalation. Reduction to out-year funding for the Defense Business Operations Fund (DBOF). Adjustment to data base to remove AFSPC and USSPACECOM procurements from CMU budget. Realignment to acquisition for additional hardware. Increase for AFSPC Command and Control.

Support: Adjustment of funding for Initial Spares and for Interim Contractor Support.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-6.2
Adjustment for Current & Prior Inflation. (Estimating)	+3.9	+4.6
FY96 adjustments due to the following reductions: FFRDC, Bosnia, Economic Sec 8125, overhead and SBIR. (Estimating)	-4.1	-5.2
Deletion of post-CMU FOC FY00 and 01 ITW/AA systems engineering funds. (Estimating)	-7.1	-9.6
FY97 reduction for RDT&E O&M cut. (Estimating)	-0.1	-0.1
Congressionally directed transfer of O&M funds to RDT&E for the Cheyenne Mountain Legacy Interface (Space and Warning Systems Center) for S/W development. (Estimating)	+12.5	+15.6
RDT&E Subtotal	+5.1	-0.9

CMU, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-1.8
Economic Adjustment for Negative Program Change. (Economic)	N/A	+0.3
Adjustment for Current & Prior Inflation. (Estimating)	+0.5	+0.5
Adjustment to data base to delete funding for AFSPC Command and Control (non-CMU). (Estimating)	-0.4	-0.4
Withdrawal of excess FY93 APCC procurement funds. (Estimating)	-0.2	-0.2
Adjustment to correct prior years SAR (Dec 91-93) values. (Estimating)	+0.4	-0.8
Adjustment to correct prior years (Dec 91-93) SAR values for spares and Interim Contractor support. (Support)	-0.4	+0.8
Adjustment for Current & Prior Inflation. (Support)	+0.8	+0.8
Reduction for changes in spares requirements. (Support)	-4.6	-5.7
Deletion of FY00/01 (post-CMU FOC) Interim Contractor Support from data base. (Support)	-2.8	-3.8
Procurement Subtotal	-6.7	-10.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1581.00	-20.60	--	--	3.60	155.10	--	42.30	180.40	1761.40

CNO, December 31, 1995

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) EDT&E --
 (U) SCIS:
 E - Systems, St. Petersburg, FL
 F19628-86-C-0131, FPIF/AF
 Award: August 21, 1986
 Definitized: August 21, 1986

			Initial Contract Price		
			Target	Ceiling	Qty
			\$26.9	\$30.3	6
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$104.2	\$117.7	26	\$112.0	\$112.0	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$-11.9	\$-0.3	
Cumulative Variances To Date (01/28/96)			\$-11.1	\$-0.2	
Net Change			\$0.8	\$0.1	

Explanation of Change:

The net change in cost and schedule variances is due to continued efficiencies being achieved on the contract.

Changes to current contract target/ceiling prices reflect additional funds placed on contract for delivery and acceptance of Phase II/III work.

There is no overall impact to the contract or program.

(U) CCFDS-R:
 TRW INC., Carson, CA
 F19628-87-C-0047, FPIF/AF
 Award: June 3, 1987
 Definitized: June 3, 1987

			Initial Contract Price		
			Target	Ceiling	Qty
			\$58.9	\$64.3	0
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$235.7	\$252.6	21	\$235.3	\$234.0	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$-5.5	\$-0.1	
Cumulative Variances To Date (12/29/95)			\$-2.7	\$-0.4	
Net Change			\$2.8	\$-0.3	

Explanation of Change:

The net change in cost and schedule variances is due to the definitization of a major contract change relating to the Phase II

CMU, December 31, 1995

15. (U) Contract Information (Cont'd):

IOC schedule adjustment and the Aug 94 CMU replan. Contract work proceeded without sufficient budget during negotiations in late 1994, causing the negative variance. Upon definitisation in May 1995, all budget was distributed and the variance was eliminated.

The contractor continues to carry approximately \$2.1M in management reserve, which is close to the cumulative negative cost variance.

As this contract is over 90% complete, this is the final report for the CCPDS-R Program.

(U) SPADOC-4C:			Initial Contract Price		
			Target	Ceiling	Qty
Loral Aerospace Corp, Colorado Springs, CO					
F19628-91-C-0169, CPIF/AF			\$57.1	N/A	1
Award: October 25, 1991					
Definitized: October 25, 1991					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$73.4	N/A	1	\$73.4	\$73.4	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
			\$3.7	\$-0.1	
Cumulative Variances To Date (01/26/96)			\$0.8	\$0.1	
Net Change			\$-2.9	\$0.2	

Explanation of Change:

Net change in the cost variance is due to contractor's recognition of an underrun through application of management reserve for additional work. This action was accomplished in July 95. Since then, cost performance has been positive by approximately \$0.1M per month in various WBS elements.

Price and variance data for this contract are for Block C only and have no negative impact on program.

(U) CSSR Subset AOC #2:			Initial Contract Price		
			Target	Ceiling	Qty
GTE Government Syst Corp, Needham Heights, MA					
F19628-92-C-0046, CPIF/AF			\$21.1	N/A	1
Award: January 28, 1992					
Definitized: July 24, 1992					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$21.4	N/A	1	\$21.8	\$21.8
			Cost Variance	Schedule Variance
Previous Cumulative Variances			\$3.0	\$0.0
Cumulative Variances To Date (03/31/95)			\$3.0	\$0.0
Net Change			\$0.0	\$0.0

Explanation of Change:

There is no cost or schedule impact to the contract or the program.

As this contract is over 90% complete, this is the final report for the CSSR Subset AOC #2.

(U) Granite Sentry: Martin-Marietta Corp., Colorado Springs, CO F19628-93-C-0036, CPIF/AF Award: April 7, 1993 Definitized: March 15, 1993	Initial Contract Price		
	Target	Ceiling	Qty
	\$28.6	N/A	1

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$40.7	N/A	1	\$40.6	\$40.6
			Cost Variance	Schedule Variance
Previous Cumulative Variances			\$-2.2	\$-1.3
Cumulative Variances To Date (01/28/96)			\$-1.5	\$-0.2
Net Change			\$0.7	\$1.1

Explanation of Change:

The net change in cost and schedule variances are a result of the contract being renegotiated and rebaselined to reflect the work remaining.

The increase in target price was the result of the contract being renegotiated and rebaselined base on the Re-plan which was signed 30 Jun 95.

There is no overall impact to the contract or the program.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 86.4% (19 yrs/22 yrs)
- (2) Percent Program Cost Appropriated: 96.9% (\$1707.2 / \$1761.4)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY78-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-99)	Total
RDT&E	1309.0	63.5	31.7	12.8	1417.0
Procurement	325.6	9.1	5.3	4.4	344.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1634.6	72.6	37.0	17.2	1761.4

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)	
		Nonrec	Rec		Program	Obligated		Ex-pended

Appropriation: 3600 Research, Development, Test + Eval, AF

1978				4.6	2.6	2.6	2.6	6.9
1979				3.6	2.2	2.2	2.2	8.3
1980				3.7	2.5	2.5	2.5	9.4
1981				3.9	2.9	2.9	2.9	12.0
1982				11.0	8.8	8.8	8.8	9.2
1983				26.3	22.0	22.0	22.0	4.8

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		FY89 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1984				63.5	55.3	55.3	55.3	3.9
1985				61.2	55.1	55.1	55.1	3.4
1986				100.7	92.8	92.8	92.8	2.7
1987				95.3	91.9	91.9	91.9	2.8
1988				111.9	110.8	110.8	110.8	3.0
1989				114.2	118.4	118.4	118.4	4.2
1990				97.2	103.9	103.9	102.5	4.0
1991				95.8	106.3	106.3	106.3	4.3
1992				104.9	119.8	119.8	119.3	2.8
1993				131.9	153.8	153.8	147.3	2.7
1994				111.7	132.5	132.5	111.4	2.0
1995				105.3	127.4	125.2	85.6	1.9
1996				51.4	63.5	30.4	4.8	2.0
1997				25.1	31.7			2.2
1998				5.9	7.6			2.3
1999				3.9	5.2			2.2
Subtot				1333.0	1417.0	1337.2	1242.5	

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16c. (U) Program Funding Summary (Cont'd):

Obligation and expenditure data reflect program office records as of 27 February 1996.

FY96/3600 amount includes anticipated below-threshold reprogramming of \$0.6M to the PRAM program, PE78026F, for the McAllen Nuclear Reactor Center, and \$0.7M in anticipated USAF withhold for Bosnia II support.

Appropriation: 3080 Other Procurement, Air Force

1982			1.0	1.0	0.8	0.8	0.8	9.2
1983			23.1	23.1	20.1	20.1	20.1	4.8
1984			26.9	26.9	24.1	24.1	24.1	3.9
1985			42.4	42.4	39.2	39.2	39.2	3.4
1986			50.9	50.9	49.1	49.1	49.1	2.7
1987			17.5	17.5	17.5	17.5	17.5	2.8
1988			18.0	18.0	18.7	18.7	18.7	3.0
1989			37.7	37.7	40.5	40.5	40.5	4.2
1990			36.4	36.4	40.3	40.3	37.9	4.0
1991			6.3	6.3	7.1	7.1	7.0	4.3
1992			14.7	16.7	19.5	19.5	18.8	2.8
1993			13.5	21.4	25.4	24.7	19.3	2.7
1994			10.4	14.5	17.6	17.4	9.9	2.0
1995				4.6	5.7	5.7	4.3	1.9
1996	1			7.2	9.1	6.4		2.0
1997				4.1	5.3			2.2
1998				2.4	3.2			2.3
1999				0.9	1.2			2.2

CSU, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

Subtot	1		298.8	332.0	344.4	331.1	307.2
Grand Total	1		298.8	1665.0	1761.4	1668.3	1549.7

Since CSU consists of a complex mix of subsystems for which a conventional unit of measure is not valid, a nominal quantity of one will be used for unit cost reporting. Quantity will always be carried in the current year.

Obligation and expenditure data reflect program office records as of 27 February 1996.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

Operations Concept - At Full Operational Capability (FOC), Air Force Space Command (AFSPC) will take over complete day-to-day operating responsibility to perform the mission. Each operational center has five crews to support the 24 hour/day mission.

Maintenance Concept - AFSPC will have responsibility for maintenance of application software using both organic manpower and contract support. Commercial Off-the-Shelf (COTS) hardware and COTS system software will have a two-level maintenance concept. AFSPC will have responsibility for organizational level hardware maintenance. Air Force Materiel Command (AFMC) will have responsibility for depot

CMU, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

level maintenance of COTS hardware and COTS system software with vendor support for repair of COTS hardware and system software.

The costs in section b were derived from the Cheyenne Mountain Complex Cost per Available Hour Estimate performed by ESC/FMCE in Dec 1994. This estimate was based on actual O&S budgetary figures provided by AFSPC. Current efforts are being made to update this estimate with FY96 figures. Average costs were computed based on O&S costs from FY95-FY99.

Although Canadian forces are on staff/duty within one or more CMU programs, they were not included in the manpower costs as their expenses are paid by the Canadian government. Any specialized training required by Canadian personnel was included.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost For CMU Steady State	Avg. Annual Cost For Antecedent
Mission Personnel	39.0	N/A
Operating Costs	2.8	N/A
Hardware Maintenance	46.1	N/A
Software Maintenance	36.4	N/A
Indirect Support	1.0	N/A
	0.0	N/A
Total	125.3	N/A

The antecedent system, CMC, is only being upgraded and not being replaced in total. The O&S cost for the CMC is captured for the entire complex and not definitized to the level of the replaced systems. Therefore, the antecedent average annual cost is not available.

c. (U) Contractor Support Costs -- None.

All contractor support costs are included in the Hardware Maintenance category and are not an add on cost. This annual average cost is approximately \$4.5M per year (FY95 \$).

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SELECTED ACQUISITION PROGRAMS REPORT - COMP (OSA) 823
PROGRAM: E-3 AWACS RSIP

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
E-3 AWACS Radar System Improvement Program
(RSIP)

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

ESC/AW
3 EGLIN STREET
HANSCOM AFB, MA 01731-2115

COL EDWARD G. TAYLOR
Assigned: February 1, 1994
AV 478-6899 COMM (617) 377-6899

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0207417F (Shared) Project 67411L (Shared)
PROCUREMENT:
APPH 3010 ICN 11411L (Air Force)

SAF/PAS
96-242 - T

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E-3 AWACS RSIP, December 31, 1995

5. (U) Related Programs:

E-3 Airborne Warning and Control System (AWACS)

6. (U) Mission and Description:

The purpose of the RSIP modification is to provide the Air Combat Command (ACC) with new and improved capabilities for the E-3 AWACS radar. The AWACS RSIP will provide improvements in radar sensitivity/electronic counter-countermeasures (ECCM) performance, radar performance monitoring and control, and reliability/maintainability (RAM) to maintain system effectiveness against the projected operational environment of the 1990's and into the next century.

The RSIP program is made up of three phases: 1) System Definition/Risk Reduction (Pre-Engineering and Manufacturing Development), 2) Engineering and Manufacturing Development (EMD), and 3) Production Modification. This program will result in hardware and software changes to the AWACS.

The modifications are primarily to the AWACS Surveillance Radar Functional Group (SRFG) which include:

(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) 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) Program Highlights:

a. (U) Significant Historical Developments --

The AFSARC review and approval to start EMD occurred in Dec 88: EMD contracts were awarded on 25 Sep 89 to Westinghouse Electric Corporation for the radar upgrade and to The Boeing Company for the system integration and testing of the radar in the aircraft. The RSIP acquisition schedule was intended to maximize concurrent installation with the Block 30/35 retrofit. Six (6) Brassboard flight tests on Test System-3 (TS-3) were conducted during Feb 90 and Mar 90 successfully demonstrating the RSIP pulse compression waveform concept. The Radar Data Processor (RDP) initial software bench prototype was delivered by subcontractor Control Data Corporation (CDC) to Westinghouse in May 90. The radar algorithm simulations were first integrated in Jun 90 confirming the viability of the RSIP two-slant signal processing technique. NATO began observing the monthly US RSIP Program Management Reviews in Sep 90. RSIP Brassboard

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7a. (U) Program Highlights (Cont'd):

Data Gathering Flight tests were conducted on TS-3 in Jan 91 - Mar 91. The "Ad Referendum" case directive for NATO's twelve month interim participation in the RSIP effort was approved in Feb 91 for \$18.0M. In Mar 92, the SPO directed the Boeing Company to resequence and reschedule their planned hardware and software integration to be consistent with a revised Westinghouse software delivery and "8.6dB" ground radar sensitivity test schedule.

The NATO/RSIP Cooperative International R&D Agreement was signed in Washington, DC on 7 May 92.

The 8.6 dB Lab Radar Demo was successfully completed on 15 Sep 92 and the government verified test results showing a 10.34 dB improvement in the laboratory environment.

The Fixed Price Determination for NATO RSIP Phase II was approved by OUSD(A) in Nov 92. (NATO Phase II is mainly for installation, check-out and test of the NATO Group A and B kits in a NATO E-3 aircraft.)

Westinghouse contract modification titled "Contract Interpretation Resolution" was issued 29 Oct 93, adjusting the contract schedule and the timing and sizing specification. On 30 Nov 93, TS-3 Installation & Check Out (I&CO) was completed, and first DT&E flight accomplished.

On 14 Jan 94, the NATO RSIP Boeing Phase I contract was definitized (Boeing Phase I is for a NATO Group A kit and development of NATO Airborne Operational Computer Program (AOCP) software.)

On 09 Aug 94, the E-3 AWACS RSIP Acquisition Program Baseline (APB) change request #4 was approved and signed.

The NATO Phase II effort was definitized on 30 Aug 94 and the Westinghouse NATO Phase II effort in Sep 94.

The Qualification Phase of the DT&E Flight Test effort began on 22 Nov 94. AFOTEC, HQ/ACC, NATO, and the AWACS Program Office reached concurrence on a strategy for IOT&E on 1 Dec 94. The Program Office sent the Production RFP and Acquisition Plan to HQ ESC for review in Dec 94.

b. (U) Significant Developments Since Last Report --

The Radar System Improvement Program (RSIP) Operational Requirements Document (ORD) was approved in Feb 95. Post Qualification tests and pre-IOT&E flights were conducted Sep 95. The Program Office took significant steps in early CY95 to resolve three of five requests for equitable adjustment (REAs) by Westinghouse totaling \$53M. Flight qualification, software Formal Qualification Testing (FQT), and in-plant formal qualification were completed with satisfactory radar detection performance.

Due to the unfortunate crash of an Airborne Warning and Control System (AWACS) aircraft in Alaska on 22 Sep 95, the kit quantity requirements have decreased from 34 to 33. ACC has requested the funds be used to fill a longstanding requirement, a second RSIP kit for the Avionics Integrated Support Facility.

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7b. (U) Program Highlights (Cont'd):

Concurrent US and NATO IOT&E testing began in Oct 95. During the first IOT&E flight a failed relay, not an RSIP component, induced a Class C mishap (reportable damage of \$10,000 or more but less than \$200,000 and/or an injury resulting in a lost workday of eight hours or more). Repairs were completed in Sep 95, a PEO requested Air Force Materiel Command (AFMC) safety review closed, and the aircraft returned to Air Force Operational Test and Evaluation (AFOTEC) in early Oct 95. The US Initial Operational Test & Evaluation (IOT&E) was comprised of six flights and NATO IOT&E comprised of seven flights.

Preliminary IOT&E results presented in Dec 95 identified deficiencies in radar performance, software maturity/maintainability, Technical Orders/Handbooks, and training. While contractual mechanisms and processes are in place to resolve these deficiencies, two findings were unexpected based on Developmental Test and Evaluation (DT&E) and pre-IOT&E test results. IOT&E results indicated inconsistent radar tracking and poor long range fighter detection in Europe. Conversely, AFOTEC IOT&E results against small targets met or exceeded the ORD values.

A Joint US/NATO Task Force consisting of the Program Office, (AFOTEC), Nato Acquisition Program Management Agency (NAPMA), Nato Early Warning Force Command (NAEWFC), Air Combat Command (ACC), AFPEO/C3, Westinghouse, and Boeing was formed in Dec 95 to resolve the critical IOT&E deficiencies. The performance problems are believed to be primarily software, but have affected areas of the hardware causing functional audits to remain open pending verification of performance fixes.

The US/NATO Production team released a production RFP on 15 Jan 95 for 18 NATO aircraft, 13 US aircraft (two in FY96, two in FY97, four in FY98, and five in FY99), and an option for eight Group B kits for the UK to the Boeing Co. as a prime contractor. After early high cost estimates from Boeing, the US/NATO/UK team worked with Boeing to yield an affordable program for all customers. Business Clearance was approved in Nov 95 and negotiations were completed prior to the NATO Board of Directors (BOD) on 6 Dec 95.

The Air Force Acquisition Executive (AFAE) approved US Low Rate Initial Production (LRIP) on 29 Nov 95.

NATO agreed to provide production schedule protection with funding for Diminishing Manufacturing Source (DMS), production line start-up, and long-lead parts in Dec 95, but postponed their production decision pending IOT&E corrective actions and verification testing. The UK followed NATO and revised their Letter of Acceptance (LOA) to fund the first increment.

The program is expected to satisfy all mission requirements.

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7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --

While planned IOT&E tests have been completed, formal IOT&E will remain open pending corrective action and critical performance fix verification planned to be complete by Jun 96. Baseline performance data collection began in Jan 96 with instrumented Test System-3 (TS-3) and NATO first (N1) flight tests in Europe.

RSIP Low Rate Initial Production (LRIP) Production contract awarded 9 Feb 96.

8. (U) Threshold Breaches:

There is a procurement cost breach to the AFAB Acquisition Program Baseline dated August 9, 1994. A program deviation report and a baseline change request will be submitted. There are no Mann-McCurdy unit cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II AFSARC	DEC 88	DEC 88	DEC 88
FSD Contract Award	SEP 89	N/A	SEP 89
Brassboard Flight Tests	APR 91	APR 91	MAR 91
System Design Review	FEB 90	FEB 90	FEB 90
Critical Design Review	JAN 91	SEP 91	SEP 91
Test System-3 (TS-3) I&CO	SEP 92	NOV 93	NOV 93
Advance Procurement Authorization	JUN 93	N/A	N/A
Flight Test DT&E			
Start	N/A	JAN 94	NOV 93
Complete	SEP 93	JAN 95	MAR 95
IOT&E			
Start	N/A	ADG 95	OCT 95 (Ch-1)
Complete	DEC 93	DEC 95	JUN 96 (Ch-2)
Physical Configuration Audit	DEC 93	DEC 95	MAR 96 (Ch-3)
Low Rate Initial Production Decision	MAR 94	NOV 95	NOV 95
Trial Installation	SEP 95	OCT 97	OCT 97
IOC (5 aircraft)	SEP 96	DEC 99	DEC 99
Required Assets Available	N/A	DEC 99	DEC 99

b. (U) Previous Change Explanations --

The Dec 90 SAR reported a planned CDR completion date of May 91 which was based on holding the SRC CDR in Jan 91 and the RCMP and Software CDRs in May 91 due to delayed completion of software requirements analysis and software documentation and design change to cathode ray tube displays.

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9b. (U) Schedule (Cont'd):

The Dec 90 SAR reflected an Air Force decision to await the completion of qualification testing before initializing procurement actions and so Advance Procurement Authorization was dropped in June 93 in favor of Long Lead Procurement in Nov 93.

The Dec 91 SAR reported that Critical Design Review (CDR) was conducted incrementally. Change to cathode ray tube display design delayed RCMP CDR. Software CDR delayed to complete software requirements analysis and software documentation. The software delay caused an anticipated delay in TS-3 I&CO, Flight Test DT&E, IOT&E, Physical Configuration Audit (PCA), Production decision and Trial Installation.

The Dec 92 SAR reported that the following EMD milestones were delayed: TS-3 I&CO, Flight Test DT&E, IOT&E and PCA. This was mainly due to Associate Contractor Westinghouse not being able to develop/integrate software at the rate anticipated at CDR. Also the Low Rate Initial Production (LRIP) decision and the Required Assets Available (RAA) milestones had slipped due to a two year delay in the start of production directed by the FY 94 President's budget.

The Dec 93 SAR reported I&CO was changed from Oct 93 to Nov 93 due to Westinghouse not being able to develop/integrate software at the anticipated rate. The DT&E flight test completion date was changed from Nov 94 to Jan 95 to realign the dates to the updated test schedule. IOT&E start date was changed from May 95 to Aug 95 to allow time for flight data reduction and report approval. IOT&E completion dates were adjusted accordingly. PCA was changed from Sep 95 to Dec 95 since PCA is defined as the final PCA session which should occur after all action items are complete. LRIP decision was changed from Oct 95 to Nov 95 with the Trial Installation changing by one month accordingly.

The Sep 94 SAR reported flight test DT&E completion has moved from Jan 95 to Mar 95 to accommodate start up problems at the beginning of flight test. FMD 60 dated 11 May 94 changed the definition of IOC from 4 aircraft to 5 aircraft. The APB was updated on 09 Aug 94 to reflect the change in IOC and RAA dates.

The Dec 94 SAR reported the start of IOT&E to have changed from Aug 95 to Jul 95.

c. (U) Current Change Explanations --

(Ch-1) IOT&E start was delayed from Jul 95 until OCT 95 due to the Class C mishap which was induced due to a failed relay (not an RSIP component) on the first IOT&E flight.

9c. (U) Schedule (Cont'd):

(Ch-2) While planned IOT&E tests have been completed, formal IOT&E will remain open pending corrective action and critical performance fix verification planned to be complete by Jun 96.

(Ch-3) Due to the delay regarding IOT&E, PCA is not expected to be complete until Mar 96.

d. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

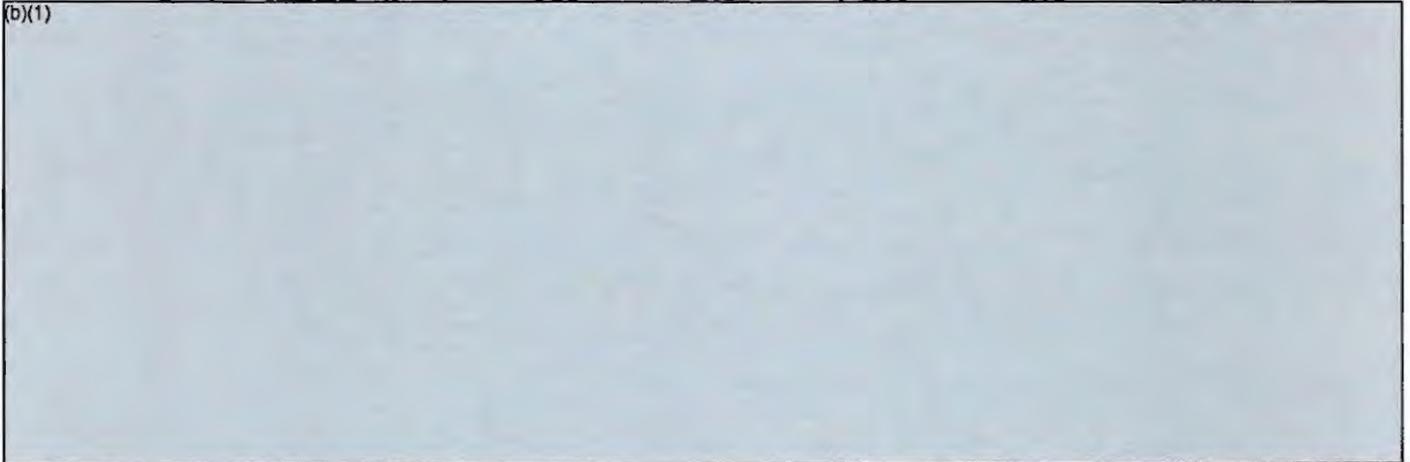
AFAE Approved Acquisition Program Baseline dated August 09, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Improve System	10.6	13.0 / 10.6	N/A	10.6



Reliability (Radar Set) Overland Mission MTBCF (hrs)	486	486 / 486	N/A	486
System MTBCF (hrs)	1400	N/A / N/A	N/A	1400



10a. (U) Performance Characteristics (Cont'd):

	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)			

Maintainability

(SRC/SRCMP)

Mean Repair Time (hrs)	.26	.26 / .26	N/A	.26
Fraction of Failures detected (%)	98	98 / 98	N/A	98

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

AFAR Approved Acquisition Program Baseline dated August 09, 1994.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development Estimate	Approved Program	Current Estimate
a. (U) Cost --			
Development (RDT&E)	349.7	367.9	375.4
Procurement	222.1	320.6	348.6
Flyaway	(175.1)		(251.1)
Other Weapon Systems	(29.4)		(83.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(17.6)		(14.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 89 Base-Year \$	571.8	688.5	724.0

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11a. (U) Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	118.1	159.2	179.4
Development (RDT&E)	(47.0)	(38.6)	(48.9)
Procurement	(71.1)	(120.6)	(130.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	689.9	847.7	903.4

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>34</u>	<u>34</u>	<u>33</u>
Total	34	34	33

Development: Excludes 6 RDT&E units which are not fully configured and items. This number previously five, includes the Test System-3 (TS-3), Avionics Integration Lab (AIL), Reliability Verification Testing (RVT), Environmental Qualification (EQ), Performance Qualification Lab (PQL). Now the number is six due to the inclusion of NATO 1 (N1).

Production LRIP quantities are numbered at four; two in FY96 and two in FY97.

c. (U) Foreign Military Sales/International Cooperative Programs -- NATO/UK:

The RSIP Memorandum of Agreement (MOA) between the USAF and the NATO Airborne Early Warning and Control (AEW&C) Program Management Organization (NAPMO), signed on 7 May 92, sets forth the terms for the RSIP Cooperative Development Program. We modified the two U.S. RSIP RMD contracts with Boeing and Westinghouse for the NATO RSIP Phase I effort and added the Boeing Phase II effort on 14 Jan 94 and the Westinghouse Phase II effort on 21 Jan 94. During Phase I Westinghouse is providing one more RSIP Group B radar set modification kit and instrumentation for the NATO E-3A aircraft. Boeing Phase I effort is providing one RSIP Group A Kit and the NATO Airborne Operational Computer Program (AOCP) software. In Phase II, Westinghouse will develop the logistics support for the RSIP hardware and software components and support Boeing during the test program; Boeing will install and integrate the RSIP prototype Group A and B kits into the NATO E-3A test aircraft and conduct the test 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

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11c. (U) Total Program Cost and Quantity (Cont'd):

U.S. test aircraft and accomplishes the majority of NATO testing on the same aircraft. Joint test was implemented as part of the Phase II portion of the NATO RSIP effort. On 31 March 1993, the United Kingdom (UK) signed a \$5.6M Letter of Offer and Acceptance (LOA) to conduct a pre-production study for incorporating production US/NATO RSIP kits into the fleet of seven (7) UK E-3D ANACS aircraft. The study consisted of two parts: Phase IA provided technical information sufficient to identify differences in the UK configuration while Phase IB designed any adaptations necessary and prepared the production Request for Proposals (RFPs) and LOA. The Boeing Company was placed on contract (EST 93-UK-04A) 13 July 1993 with the Westinghouse Corporation placed on directed subcontract on 1 September 1993 to support Phase I. Including the \$5.8M Phase IB LOA option, the study lasted for approximately two years. UK requirement is to buy production kits for all 7 UK aircraft and 1 ground laboratory.

The US/NATO/UK have joined together and awarded a contract on 9 Feb 96 to purchase 28 aircraft worth of RSIP kits (2 US, 18 NATO, and 8 UK) under the production program. Furthermore, the US has contracted for 11 more aircraft worth of kits in three follow-on options in FY97, FY98, and FY99.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

FY 91 Amended President's Budget, 29 Jan 90

(U) Approved Program:

AFAE Approved Acquisition Program Baseline dated August 09, 1994.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCB Baseline</u> (NOV 94 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	724.0	688.5	
(2) Quantity	33	34	
(3) Unit Cost	21.939	20.250	8.34

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12. (U) Unit Cost Summary (Cont'd):

	<u>Current Estimate</u>	<u>DCR Baseline</u>	<u>Percent Change</u>
b. (U) Procurement			
(1) Cost (BY89\$)	348.6	320.6	
(2) Quantity	33	34	
(3) Unit Cost	10.564	9.429	12.03

The significant drop in inflation rates has forced the generation of artificial changes to the program base year baseline. With a negotiated and awarded production contract and options, we cannot adjust the then year budget profile for this program. For this reason we have discontinued the use of the SAR as the tool to indicate a program breach.

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RYEAR	PROC	MILCON	TOTAL
Development Estimate	396.7	293.2	0.0	689.9
Previous Changes:				
Economic	-2.5	-10.5	-	-13.0
Quantity	-	-	-	-
Schedule	+48.4	+86.9	-	+135.3
Engineering	-76.7	-	-	-76.7
Estimating	+59.6	+57.7	-	+117.3
Other	-	-	-	-
Support	-	+40.6	-	+40.6
Subtotal	+28.8	+174.7	-	+203.5
Current Changes:				
Economic	-1.8	-26.9	-	-28.7
Quantity	-	-10.1	-	-10.1
Schedule	-	1.3	-	+1.3
Engineering	-	-	-	-
Estimating	0.6	12.3	-	+12.9
Other	-	-	-	-
Support	-	34.6	-	+34.6
Subtotal	-1.2	+11.2	-	+10.0
Total Changes	+27.6	+185.9	-	+213.5
Current Estimate	424.3	479.1	-	903.4

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	349.7	222.1	0.0	571.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	+32.1	+35.2	-	+67.3
Engineering	-62.0	-	-	-62.0
Estimating	+54.9	+38.2	-	+93.1
Other	-	-	-	-
Support	-	+26.3	-	+26.3
Subtotal	+25.0	+99.7	-	+124.7
Current Changes:				
Quantity	-	-6.3	-	-6.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	0.7	8.9	-	+9.6
Other	-	-	-	-
Support	-	24.2	-	+24.2
Subtotal	+0.7	+26.8	-	+27.5
Total Changes	+25.7	+126.5	-	+152.2
Current Estimate	375.4	348.6	-	724.0

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: Revised production schedule to allow for completion of qualification testing. Stretched FY 1989-94 program through FY 1996.

Engineering: Depot activation costs transferred to RDT&E funding (FY 92-93) from procurement funding (FY93). Depot development descope. FY 91 Congressional reduction; Must be covered by NATO funding. Specification changes to existing contract. Reduction of US program due to NATO share of development cost.

Estimating: Funded an unfunded requirement to cover contract

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13b. (U) Cost Variance Analysis (Cont'd):

termination liability requirements. Revised program estimate of program requirements. Internal AWACS reallocation between mod projects used to cover contract termination liability. RSIP portion of AWACS Desert Storm assessment. Adjustment for current and prior year inflation. Revised estimate of engineering change orders. Revised estimate of program office support requirements. Revised estimate due to impact of inflation indices.

Procurement

Economic: Revised economic escalation indices. Economic adjustment for negative program change.

Schedule: Revised production schedule to allow completion of qualification testing. Slip in program start from FY 94 to FY 96 (prod. break & econ. esc. affect incl.) & completion from FY 98 to FY 02.

Estimating: Transfer of Installation costs to Procurement from O&M. Revised estimate of Group A/B Kits. Correction of categorization in Dec 90 SAR for Group A/B Kits. Revised estimate of Group A kits based on EMD actuals. Revised estimate of Group B kits based on EMD actuals. Revised estimate of installation based on install hours and labor hourly rate increase. Revised estimate of non-recurring requirements. Realigned funding to year of kit install to comply with funding policy. Due to change in Contract Acquisition Strategy from Assoc/Assoc to Prime/Sub, contract management cost moved from SPO (-13.3) to Prime Contractor (+15.6).

Support: Depot Activation costs (FY 93) transferred to RDT&E funding (FY92-93). Initial Spares funding reduced. Support estimate updated (Data, Support Equip, Sim/Trainers costs increased). Correction of categorization in Dec 90 SAR for other support costs. Revised Initial Spares requirement. Revised funding estimate for modifications to simulator/trainers and data. Additional PSE requirements. Data estimate revised. Increase to SPO support. Additional requirements for Avionics Integration Support Facility, Commodity Mod Kits, and Interim Contractor Support. Revised estimate for Initial Spares. Due to change in Contract Acquisition Strategy from Assoc/Assoc to Prime/Sub, contract management cost moved from SPO (-13.3) to Prime Contractor (+15.6).

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13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-1.8
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+1.8
Budget adjustment and reallocation for approved funding. (Estimating)	-0.8	-1.2
	<hr/>	<hr/>
RDT&E Subtotal	+0.7	-1.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-27.8
Economic adjustment for negative program change. (Economic)	N/A	+0.9
Quantity decrease of one unit due to loss of aircraft in Alaska crash. (recurring dollars) (Quantity)	-6.3	-10.1
Revised annual procurement buy profile to realign approved budget. (Schedule)	--	+1.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.8	+1.0
Due to change in contractor production startup requirements non-recurring cost increased. (Estimating)	+6.5	+8.3
Group A, Group B, System Engineering Program Management and installation changed due to negotiated CLIN costs and cost extrapolation for out years. (Estimating)	+1.6	+3.0
Adjustment for Current and Prior Inflation. (Support)	+0.6	+0.8
Initial spares changed due to an update of required FY sparing levels and actual negotiated spares cost. (Support)	+1.3	+2.0
Other weapons systems changed due to addition of an AISP kit (\$7.7M), SRTS updated requirements (\$7M), training and support requirements (\$17.1). (Support)	+22.3	+31.8
	<hr/>	<hr/>
Procurement Subtotal	+26.8	+11.2

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
20.291	-1.264	0.310	4.139	-2.324	3.945	--	2.279	7.085	27.376

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) <u>AWACS RSIP (Group B Kit):</u> Westinghouse Electric Cor, Baltimore, MD F19628-89-C-0138, FPIF Award: September 25, 1989 Definitized: September 25, 1989	Initial Contract Price		
	Target	Ceiling	Qty
	\$223.6	\$251.8	5

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$300.6	\$334.8	6	\$315.1	\$328.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-65.2	\$-2.6
Cumulative Variances To Date (12/31/95)	\$-49.7	\$-0.2
Net Change	\$15.5	\$2.4

Explanation of Change:

Current CPR analysis projects a best case of \$328.2M at completion if WEC performs remaining work with no variance.

The net change of \$15.5M from -\$65.2M to -\$49.7M unfavorable cost variance reflects a consistent improvement in maintaining the cost overrun which was primarily due to the Radar Data Processor Operational Software build. The net change of \$2.4M from -\$2.6M to -\$0.2M unfavorable schedule variance is due to correction of discrepancies found during flight testing.

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15. (U) Contract Information (Cont'd):

(U) <u>AWACS RSIP (Group A Kit):</u>			Initial Contract Price		
The Boeing Company, Seattle, WA	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
F19628-89-C-0139, FPIF	\$59.0	\$65.0	3		
Award: September 25, 1989					
Definitized: September 25, 1989					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$105.8	\$114.0	4	\$105.8	\$99.4	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-2.1	\$-1.6	
Cumulative Variances To Date (11/23/95)			\$-1.0	\$-0.3	
Net Change			\$1.1	\$1.3	

Explanation of Change:

The net change of \$1.1M from -\$2.1M to -\$1M unfavorable cost variance reflects the efficiency in cost performance Boeing has maintained throughout the program. The net change of \$1.3M from -\$1.6M to -\$0.3M unfavorable schedule variance is primarily due to correction of discrepancies found during flight testing. The current contract price reflects the negotiated contract. The contractor's estimated price at completion reflects the contract target price.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 44.4% (8 yrs/18 yrs)
- (2) Percent Program Cost Appropriated: 52.8% (\$477.1 / \$903.4)

E-3 ANACS RSIP, December 31, 1995

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY89-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	393.1	31.2	-	-	424.3
Procurement	-	52.8	50.9	375.4	479.1
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	393.1	84.0	50.9	375.4	903.4

RSIP Development (RDT&E) is now a cooperative program with NATO. The total \$424.3M (TY\$) is the U.S. share of the cooperative development program.

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY89 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (\$)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: 3600 Research, Development, Test + Eval, AF

1989				42.6	44.2	44.2	44.2	4.2
1990				59.6	63.7	63.7	63.7	4.0
1991				64.7	71.8	71.8	71.8	4.3
1992				102.5	117.1	117.1	117.1	2.8
1993				13.2	15.4	15.4	15.4	2.7
1994				32.7	38.8	38.5	24.2	2.5
1995				34.8	42.1	32.2	27.1	1.9

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (\$)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1996				25.3	31.2	1.9		2.0
1997								2.2
1998								2.3
1999								2.2
2000								2.2
Subtot				375.4	424.3	384.8	363.5	

Appropriation: 3010 Aircraft Procurement, Air Force

1996	2	13.5	17.1	41.5	52.8			2.0
1997	2		15.1	39.1	50.9			2.2
1998	4		26.5	48.1	64.0			2.3
1999	5		34.9	39.4	53.6			2.2
2000	6		43.9	54.4	75.6			2.2
2001	7		51.4	61.4	87.2			2.2
2002	6	2.0	37.7	47.0	68.2			2.2
2003				2.1	3.1			2.2
2004	1		9.0	14.9	22.6			2.2
2005								2.2

E-3 AWACS RSIP, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2006				0.7	1.1			2.2
Subtot	33	15.5	235.6	348.6	479.1			
Grand Total	33	15.5	235.6	724.0	903.4	384.8	363.5	

Accounting data for Obligated and Expended is as of 31 Dec 95.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The operating and support cost estimate for AWACS RSIP was updated in Aug 95. The concept of operation is for a fleet of 32 aircraft, which does not include the TS-3, flying 1000 hours per year each with two-level maintenance. In the updated O&S cost, a comparison was made between the Post-RSIP and the Pre-RSIP configurations. These two estimates were separately prepared to reflect the annual steady-state cost, the phase-out of the predecessor system AN/APY-1/2 radar and the phase-in to the steady-state of the Post-RSIP modification to the AN/APY-1/2 radar. The Pre-RSIP system estimated FY96 as the steady-state year with complete phase out by FY04. The O&S cost of the Pre and Post systems are used to compare the differences in support cost in the steady-state mode. The mission personnel element includes the cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support a discrete electronic system. Unit level consumption includes

E-3 AWACS RSIP, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

consumables, condemnations, second destination transportation, and organizational level simulator maintenance. The depot maintenance includes the cost of labor, material, and overhead incurred in performing major overhauls or maintenance on an electronic system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The contractor support includes the cost of contractor labor, materials, and depreciable assets used in providing all or part of the logistics support to a weapon system, subsystem, or related support equipment. Sustaining support includes the cost of replacement support equipment, modification kits, sustaining engineering, software maintenance support and simulator operations. Indirect support includes the costs of personnel support for specialty training, permanent changes of station, and medical care. Indirect cost also includes the costs of relevant host installation services, such as base operating support and real property maintenance.

b. (U) Costs -- (FY 1989 Constant (Base-Year) Dollars in Millions)

Cost Element	Radar System, E-3 Avg Annual Steady-St Radar with RSIP	Avg Annual Steady-St Fleet Predecessor E3 Radar Pre-RSIP
Personnel	9.9	10.3
Unit Level Consumption	2.5	5.3
Depot Maintenance	0.2	0.0
Contractor Support	0.0	0.5
Sustaining Support	4.1	3.2
Indirect Support	5.8	5.9
Total	22.5	25.2

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: Joint STARS GSM

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Joint STARS Ground Station Module

2. DoD Component: Army

3. Responsible Office and Telephone Number:
SFAE-I EW-JS COL. James L. Mitchell
FT. Monmouth, NJ 07703-5304 Assigned: September 13, 1991
AV 987-5165 COMM 908-427-5165

4. Program Elements/Procurement Line Items:

- RDT&E:
 - PE 64770 Project D202
- PROCUREMENT:
 - APPN 2035 ICN BA1080 (Army)
 - APPN 2035 ICN BA9103 (Army)

5. Related Programs:
Joint STARS Aircraft (USAF)
OV-1D Side-Looking Airborne Radar (SLAR) System
Unmanned Aerial Vehicle (UAV) (Imagery)
Bradley Fighting Vehicle System Variant (XM4)
High Mobility Multipurpose Wheeled Vehicle (HMMWV)
Commander's Tactical Terminal (CTT)

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~~MSO [Signature]~~

96-C-0361

Joint STARS GSM, December 31, 1995

6. Mission and Description:

The Joint Surveillance Target Attack Radar System (Joint STARS), is a surveillance, battle management and targeting radar system. It is a Joint Army and Air Force Program with the Air Force as the executive service. The Joint STARS radar is an airborne multimode radar system, incorporating an electronically scanned antenna and combining both Moving Target Indicator (MTI), Fixed Target Indicator (FTI) and Synthetic Aperture Radar (SAR) functions. The radar is carried aboard a modified E-8 Aircraft (AN/TSQ-XXX) and broadcasts processed radar data to the Army Ground Station Modules (GSM) through an omnidirectional data link. GSMs also receive and process intelligence data from Unmanned Aerial Vehicles (UAV) and Commander's Tactical Terminal (CTT). 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 Corps requires wide area surveillance to understand enemy force buildups and scheme-of-maneuver, in order to apply effective and timely maneuver of forces, battlefield management, and targeting of artillery, rockets and stand-off missiles. There is no other system planned to provide this data in real-time. Joint STARS provides commanders at Tactical and Operational Echelons a near real-time, wide area surveillance system to monitor enemy force movements into and through the joint battle area. This allows air and ground commanders to take timely actions to shape the battle and decisively engage the enemy with fire and maneuver.

7. Program Highlights:

a. Significant Historical Developments --

In May 82, an OSD/USDRE memorandum directed that a Joint Air Force/Army Program Management Office be established, under Air Force lead, to develop a single multi-mode target acquisition and weapon guidance system. The Joint STARS Program resulted from this directive and was organized from the PAVE MOVER and SOTAS Program Offices. The Army Ground Station Module (GSM) Full Scale Engineering Development (FSED) contract was awarded to Motorola corporation in Aug 84. A Downsized Ground Station Module (DGSM) FSED was awarded Mar 86. In Sep 87, the Army directed the acquisition of nine Limited Procurement Urgent (LPU) Ground Station Modules (GSMs). These LPU variants receive, process and display OV-1 Mohawk SLAR (Side Looking Airborne Radar) radar data. The DGSM was subsequently stopped while still in the design phase, leaving two GSMs at the time (FY87); the Interim GSM (IGSM) and the LPU GSM. Both configurations were mounted on Army standard five-ton trucks, and shared a majority of payload subcomponents. In Dec 1988, the GSM program was restructured to capture all user requirements, synchronize GSM and aircraft fieldings, and to field GSMs in time to support other 'Deep Battle' programs. In order to achieve these

Joint STARS GSM, December 31, 1995

7a. Program Highlights (Cont'd):

objectives, the existing GSM was to be enhanced in a phased effort (IGSM, LPU, Block I, Block II). Block I improvements entail downsizing the electronic suite, increasing operational capabilities, and enhancing modularity of LRUs (Line Replaceable Units) for standardization and subsequent export to other Intelligence and Electronic Warfare (IEW) systems. At this time, Block II improvements involved integrating the Block I mission equipment and functions into an Electronic Fighting Vehicle System (EFVS) (a Bradley FVS variant) in order to meet Nuclear Biological Chemical (NBC) and nuclear hardening requirements of heavy divisions/ corps. In Sep 90, Operational Field Demonstration (OFD-1) successfully demonstrated the JSTARS system (Aircraft/GSM) capabilities to NATO and US Forces in Europe. The JCS ordered the deployment of the Joint STARS system, aircraft and Ground Station Modules (GSMs) to Operation Desert Storm in December 90. The order came at the request of CINCCENT (Commander-in Chief Central Command). In March 91, ODCSOPS developed a revised distribution plan which aligned GSM fieldings with anticipated future force structure and operational requirements. Based on this new distribution, quantities increased from 90 to 125. During the FY92 Defense Appropriation review process, the GSM budget request was increased \$20M. These funds were directed for developing a light weight GSM. This increase accelerated start-up of the Light GSM (LGSM) EMD effort to FY92. The Joint STARS FY93 RDTE program was increased by \$35M by Congress to complete the acceleration of the Block I Light EMD effort. The current ORD modifies the nomenclature of the various GSM Blocks. Since the system capabilities and Prime Mission Equipment (PME) are essentially the same for all GSMs produced through FY95, the Block II and IIA programs have been redesignated as the Block I Heavy GSM (HGSM) and Block I Light GSM (LGSM) respectively. Consequently, the Block I and Block III GSMs have been redesignated the Block I Medium (MGSM) and Block II (Common Ground Station). The Common Ground Station (CGS, AKA Block III) is anticipated to also be configured in Light and Heavy variants. Based on successful testing the Army System Acquisition Review Council (ASARC) approved Low Rate Initial Production (LRIP) of 12 MGSMs on 10 May 93. The Defense Acquisition Board (DAB) also approved the MGSM LRIP and the exit criteria for the FY95 LGSM LRIP on 23 July 93. The JSTARS revised Acquisition Program Baseline (APB) was approved by the Under Secretary of Defense for Acquisition (USD(A)) on 11 August 93. In addition the (USD(A)) approved the acceleration of the CGS, which will result in an evolutionary P3I program beginning in FY96. The approval of the Acquisition Decision Memorandum (ADM) accelerating the CGS was formally received on 6 November 93. The GSM was designated an Army Lead program for the application of Acquisition Streamlining/Reform initiatives by the Deputy Secretary of Defense on 23 August 1994. The Joint STARS GSM is

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Joint STARS GSM, December 31, 1995

7a. Program Highlights (Cont'd):

participating in a NATO demonstration and experimentation program to evaluate alternative systems to provide airborne reconnaissance capability in support of NATO Operations. In October 1994, the GSM and JSTARS aircraft participated in EUROSTAR 94, which resulted in continued NATO interest in the program. In 1995, NATO created an Embryonic Project Office (EPO) to pursue additional cooperative efforts.

b. Significant Developments Since Last Report --

The Embryonic Project Office (EPO) has been established in Brussels, Belgium to pursue acquisition of a NATO Alliance Ground Surveillance capability. On 15 March 95 an Army System Acquisition Review Council (ASARC) was held to obtain approval for the LRIP of 10 Light Ground Stations Modules (LGSM). This was the initial ASARC conducted under the new ASARC Streamlining Process Action Team (PAT) charter. The ASARC approved the LRIP and on 2 May 95, the Army Acquisition Executive signed the Acquisition Decision Memorandum (ADM). The LGSM LRIP contract was awarded 31 July 95 to Motorola Corp., Scottsdale, Arizona with first delivery scheduled for October 1996. The Common Ground Station competitive solicitation was formally released on 6 June 95. The solicitation was based on a performance specification and encouraged potential offerors to make maximum use of best commercial practice. The JSTARS Enhanced ground Station Module (EGSM) was displayed during the Paris Air Show in June 95. The EGSM was subsequently sent to the SHAPE Technical Center (STC) to be used as part of a US initiative to demonstrate and study interoperability of Joint STARS in the NATO command and control environment. The Common Ground Station LRIP contract was awarded on 14 December 1995 via full and open competition to a team headed by Motorola Corp. of Scottsdale, Arizona. The Acquisition Program Baseline and Acquisition Strategy Report approving the CGS approach and authorizing award of an eight year competitive contract (basic year plus seven option years) provides for potential significant unit price reductions based on range quantity pricing. The higher quantities range can provide CGS capabilities to other services or US Allies. The first two years of the CGS contract were designated as LRIPs in order to allow the delivery and test of the performance based hardware prior to the Milestone III now scheduled for May 98. On 2 December 95 the Chief, Joint Chiefs of Staff (CJCS) tasked Joint STARS to support Operation JOINT ENDEAVOR. A total of twelve GSMS and two aircraft were deployed and theater Initial Operating Capability (IOC) was declared on 27 December 1995. The planned Multiservice Operational Test and Evaluation was canceled. However, data was collected and an operational evaluation conducted in concert with the deployed operations.

The Joint STARS system is expected to satisfy mission requirements.

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Joint STARS GSM, December 31, 1995

7b. Program Highlights (Cont'd):

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 05 Oct 95. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
INTERIM GSM			
FSD Award	AUG 84	AUG 84	AUG 84
CDR	FEB 85	FEB 85	FEB 85
Force DT&E	FEB 90	N/A	N/A
Joint SLPA/GD/OA:			
Start	OCT 90	SEP 90	SEP 90
Complete	N/A	SEP 91	N/A
First Unit Equipped	OCT 93	OCT 93	OCT 93
LPU GSM			
Limited Prod Contract Award	SEP 87	SEP 87	SEP 87
ARDS Eval (UK)	N/A	NOV 88	NOV 88
PDT&E			
Start	JUN 89	AUG 89	N/A
First Delivery	N/A	JUL 89	JUL 89
ARDS Eval (France)	N/A	AUG 89	AUG 89
First US Unit Equipped	JUN 90	MAY 90	MAY 90
Type Classification (LPU)	N/A	JUL 92	JUL 92
Block I (Medium) GSM			
FSD Award	AUG 89	SEP 89	SEP 89
CDR	N/A	JUL 90	NOV 90
PDR	MAR 90	N/A	MAR 90
Development Test			
Start	N/A	APR 92	APR 92
Complete	N/A	SEP 92	SEP 92
Milestone III	NOV 92	N/A	N/A
LRIP Decision	N/A	JUL 93	JUL 93
LRIP Contract Award	DEC 92	JUL 93	SEP 93
First Production Delivery	N/A	NOV 95	JUL 95 (Ch-1)
Production Qualification Test (POT)			
Start	N/A	MAY 95	JUL 95
Complete	N/A	AUG 95	OCT 95
Organic Support Capability (MGSM)	N/A	FEB 96	DEC 95 (Ch-1)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Depot Support Capability (MGSM)	N/A	N/A	N/A
First Unit Equipped	SEP 94	FEB 96	FEB 96
MOTE			
Start	N/A	JUN 95	NOV 95
Complete	N/A	FEB 96	FEB 96
Block I (Heavy) GSM			
Early Prototype Awd	N/A	JAN 92	JAN 92
Prototype Delivery	N/A	FEB 94	FEB 94 (Ch-2)
Operational Assessment	N/A	APR 94	APR 94 (Ch-2)
EMD Award	OCT 92	N/A	N/A
CDR	APR 93	N/A	N/A
FDT&E			
Start	JAN 94	N/A	N/A
Milestone III	N/A	N/A	N/A
Production Award	MAR 95	N/A	N/A
First Unit Equipped	MAR 97	N/A	N/A
Block I (Light) GSM (LGSM)			
EMD Award	N/A	MAY 92	MAY 92
CDR	N/A	JUN 93	AUG 93
Development Test			
Start	N/A	NOV 93	MAR 94
Complete	N/A	SEP 95	SEP 95
FDT&E			
Start	N/A	AUG 94	SEP 94 (Ch-2)
Complete	N/A	OCT 94	OCT 94 (Ch-2)
LRIP Decision	N/A	MAR 95	MAR 95
MOTE			
Start	N/A	JUN 95	NOV 95
Complete	N/A	FEB 96	APR 96 (Ch-3)
First Low Rate Production Delivery	N/A	NOV 96	MAR 97 (Ch-4)
First Unit Equipped	N/A	JAN 97	MAY 97 (Ch-4)
Organic Support Capability (LGSM)	N/A	JAN 97	MAY 97 (Ch-4)
Block II Common Ground Station (CGS)			
LRIP Award	N/A	NOV 95	DEC 95 (Ch-2)
Milestone III/IV	N/A	MAY 98	MAY 98 (Ch-2)
Operational Test			
Start	N/A	NOV 97	NOV 97 (Ch-2)
Complete	N/A	DEC 97	DEC 97 (Ch-2)
Technical/Operational Assessment I	N/A	MAR 99	DEL (Ch-2)
First Delivery	N/A	APR 97	APR 97 (Ch-5)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
First Unit Equipped	N/A	SEP 97	SEP 97(Ch-5)
Organic Support Capability (CGS)	N/A	SEP 97	SEP 97(Ch-5)

b. Previous Change Explanations --

Force DT&E was deleted per HQDA message R202140Z JUL 89. Milestone name changed from Joint IOT&E (Initial Operational Test & Evaluation) to Joint SLPV/GD/OA (System Level Performance Verification/Government Development Test and Evaluation/Operational Assessment) Block I Medium GSM (MGSM) Contract Award (CA) was changed to reflect actuals. First Unit Equipped (FUE), Block II Heavy GSM (HGSM) FDT&E, PDR and CDR were changed to correct program office reporting errors. Approved Acquisition Program Baseline milestones added to SAR reporting. The GD and OA milestones were Air Force only and have been deleted. Late subcontractor material deliveries delayed Block I Medium (MGSM) TT/UT, Milestone III (LRIP), and CA. This in turn caused Block I delays to the First MGSM Production Delivery (FPD), First Article Test (FAT), and FUE. The acceleration of the Block IIA Light GSM (LGSM) has caused delays in the Block II (HGSM) FSD Award, CDR, Production IPR, Production Award, FPD and FUE. The Block II (HGSM) FDT&E start and complete is no longer an applicable milestone per TEMP and has been deleted. Block I Medium Milestone III and Block I CA changed from Mar 93 to Jul 93 due to the slip in the technical and user tests. The Milestone III was also changed to an LRIP decision. Block II (HGSM) FSD Award changed from Jan 93 to Sep 93 due to extended preparation and review of the technical specifications and solicitation/proposal. The Block II (HGSM) EMD program has subsequently been deleted. New milestones introduced concurrent with the approval of new APB dated 11 August 1993. MGSM awarded on LRIP basis, actual Contract Award Date shown. HGSM characteristics deleted in accordance with APB revisions. MGSM PQT slipped due to end item mods. GSM depot changed to N/A as LCCS implemented after log study recommendation. MOTE slips due to delays in aircraft software maturity. LGSM awarded as LRIP, thereby negating need for MSIII. LGSM 1st Del, FUE and Org Spt delayed based on late LRIP award and longer than anticipated production lead time.

c. Current Change Explanations --

The following milestones changed from the previous SAR:

Milestone	From	To	Reason
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9c. Schedule (Cont'd):

(Ch-1)	MGSM 1st prod	FEB 96	JUL 95	Changes made to reflect actual dates.
	MGSM org spt	FEB 96	DEC 95	
(Ch-2)				All characteristics under this change are new based on revised APB dated 05 Oct 1995.
(Ch-3)	LGSM MOTE comp	FEB 96	APR 96	MOTE extended due to JSTARS participation in Joint Endeavor and decision to conduct MOTE in Europe.
(Ch-4)	LGSM LRIP 1 del	JUN 97	MAR 97	These changes are due to acceleration of LGSM production contract.
	LGSM FUE	NOV 97	MAY 97	
	LGSM org spt	NOV 97	MAY 97	
(Ch-5)	CGS 1st del	MAY 98	APR 97	These changes are the result of acceleration of the CGS contract award.
	CGS FUE	AUG 98	SEP 97	
	CGS org spt	AUG 98	SEP 97	

d. References --

Development Estimate:

ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

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9d. Schedule (Cont'd):

Approved Program:

Approved Acquisition Program Baseline dated October 05, 1995.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
INTERIM GSM				
Time Compression/ Integration of Data Display (frames MTI data per second)	5	5 / Level sufficient to demonstrate target movement on GSM monitor	5	5
Target Auto Track/ Prediction (track on tgt file)	16	N/A / N/A	16	16
Software Assisted Target Tracking/ Prediction (# of target files traced)	N/A	16 / 16	16	16 (Ch-1)
Interface JSTARS Radar & AN/UPD-7 Radar (bits per second) (k)	50	50 / 50	50	50
Workstations	2	2 / 2	2	2
Reliability				
Mean Time Between Failure (MTBF) (hrs)	150	150 / 125	155	155
Mean Time Between Op Maint Failure (MTBOMF) (hrs)	71	70 / 70	77	77
Maintenance				
Mean Time to Repair (MTTR) (min)	30	30 / 30	13	13
Mean Time to Repair (MTTR) ODS/GS (min)	60	60 / 60	60	60

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Max Time to Repair Unit (min)	60	60	/ 60	30	30
Max Time to Repair (DS/GS (hrs))	3.5	3.5	/ 3.5	3.5	3.5
Interoperability	Rec & Trans to both TACFIRE (19) and ASAS (11)	Rec & Trans to TACFIRE (10) and ASAS (10)	/ Rec & Trans to TACFIRE (6) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (7) and ASAS (2)
LPU GSM					
Workstations	2	2	/ 2	2	2
Track Targets	Display time of detection heading, speed & location	Display time of detection heading, speed & location	/ Display target file description heading, speed & location	Display target file description heading, speed & location	Display target file description heading, speed & location
Predict Target Locations	Time of arrival	Time of arrival	/ Time of arrival	Time of arrival	Time of arrival
BLOCK I (MEDIUM) GSM					
Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level sufficient to demonstrate target movement on GSM monitor	5	5
Software Assisted Target Tracking Prediction (# of target files tracked)	N/A	16	/ 16	16	16

Joint STARS GSM, December 31, 1995

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Interface JSTARS Radar (bits per second) (k)	N/A	50	/ 50	50	50
Workstations	N/A	2	/ 2	2	2
Operational Availability (HW&SW)	N/A	.80	/ .75	.86	.90 (Ch-1)
Maintenance (HW&SW)					
Mean Time to Repair (MTTR) (min)	N/A	30	/ 60	30	30
Mean Time to Repair (MTTR) DS/GS (min)	N/A	60	/ 180	60	60
Interoperability	N/A	Rec & Trans to TACFIRE (10) and ASAS (10)	/ Rec & Trans to TACFIRE (6) and ASAS (2)	Rec & Trans to TACFIRE (19) and ASAS (2)	Rec & Trans to TACFIRE (7) and ASAS (2)
Standard IEW Modules	Std HW & SF	Std HW & SW	/ Std HW & SW	Std HW & SW	Std HW & SW
Payload Weight (lbs)	9500	N/A	/ N/A	N/A	N/A
Imagery Storage (hrs on line per 2 hrs video)	8	N/A	/ N/A	N/A	N/A
Imagery Storage (hrs)					
Digital Radar	N/A	8	/ 8	8	8
Video (analog)	N/A	2	/ 2	2	2
Simultaneous Multisensor Operations	Data from 2 or more sensors	Data from 2 or more sensors	/ Data from 2 or more sensors	Data from 2 sensors	Data from more than 2 sensors
Two Independent Workstations	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	Display MTI, FTI & SAR data	Display MTI, FTI & SAR data

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Remote Data Display	Data into existing data process facility	Data into existing data process facilit	/ Data into existing data process facilit	Data into existing data process facility	Data into existing data process facility	
Nuclear Survivability	Hardened against EMP	Hardened against EMP	/ Hardened against EMP	Hardened against EMP	Hardened against EMP	
Hard copy data capability	N/A	Color printout of IMINT graphics & text	/ Color printout of IMINT data	Color printout of IMINT data	Color printout of IMINT data	
BLOCK I (HEAVY) GSM Nuclear Survivability	Hardened against EMP and TREE thermal radiation and blast	N/A	/ N/A	N/A	N/A	
NBC Survivability	NBC protected	N/A	/ N/A	N/A	N/A	(Ch-1)
Commander's Tactical Terminal (CTT)	CTT data interface	N/A	/ N/A	N/A	N/A	(Ch-1)
BLOCK I (LIGHT) GSM Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level sufficient to demonstrate target movement on GSM monitor	5	5	

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Software Assisted Target Tracking/Prediction (# of target files tracked)	N/A	16	/ 16	16	16	
Workstations Operational Availability (HW&SW)	N/A	2	/ 2	2	2	
Maintenance (HW&SW) Mean Time to Repair (MTR) (min)	N/A	.80	/ .75	.80	.90	(Ch-1)
Mean Time to Repair (MTR) (min)	N/A	30	/ 60	TBD	30	
Mean Time to Repair (MTR) DS/GS (min)	N/A	60	/ 180	TBD	60	
Interoperability	N/A	Rec & trans to TACFIRE (10) and ASAS (10)	/ Rec & trans to TACFIRE (6) and ASAS (2)	Rec & Trans to both TACFIRE (7) and ASAS (2)	Rec & Trans to both TACFIRE (7) and ASAS (2)	
Standard IEW Modules	N/A	Std HW & SW	/ Std HW & SW	Std HW & HW	Std HW & SW	
Imagery Storage (hrs)						
Digital Radar	N/A	8	/ 8	8	8	
Video (analog)	N/A	2	/ 2	2	2	
Simultaneous Multisensor Operations	N/A	Data from 2 or more sensors	/ Data from 2 or more sensors	Data from 2 or more sensors	Data from 2 or more sensors	
Two Independent Workstations	N/A	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data	Display MTI, FTI, and SAR data	

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Remote Data Display	N/A	Data into existing data process facilit	/ Data into existing data process facilit	Data into existing data process facility	Data into existing data process facility
Nuclear Survivability	N/A	Y Hardened against EMP	/ Y Hardened against EMP	Hardened against EMP	Hardened against EMP
Hard copy data capability	N/A	Color printout of IMINT, graphics & text	/ Color printout of IMINT data	Color printout of IMINT data	Color printout of IMINT data
Transportability	N/A	C-130 drive on, drive off	/ C-130 drive on, drive off	C-130 drive on, drive off	C-130 drive on, drive off
Set up/Tear down (w/3 man crew) (min)	N/A	10	/ 15	15	15
Commander's Tactical Terminal (CTT)	N/A	CTT data inter-face	/ CTT data inter-face	CTT data inter-face	CTT data inter-face
Remote Data Display (m)	N/A	Up to 1000M into an existing data process-ing fac-ility	/ Up to 100M into an existing data process-ing facility	Up to 300M into an existing data process facility	Up to 1000 into an existing data process-ing facility
Payload weight (each vehicle) (lbs)	N/A	4250	/ 4400	4250	4250

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Platforms	N/A	Develop and deploy in Lt, Med, & Hvy configs	/ Develop and deploy in Lt config	TBD	Develop and deploy in Lt, config	
Secondary Data Dissemination	N/A	Provide secondary data communication via SATCOM or wide area Coms to distribute JSTARS and other correlated IEW common data beyond line of sight	/ Provide secondary data communication via SATCOM or wide area Coms to distribute JSTARS data beyond line of sight capability	TBD	Provide secondary data communication via SATCOM and wide area Coms (eg MSE) to distribute JSTARS and other correlated IEW common data beyond line of sight	
BLOCK II (CGS) Time Compression/ Integration of Data Display (frames MTI data per second)	N/A	5	/ Level sufficient to demonstrate target movement on GSM monitor	TBD	5	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Software Assisted Target Tracking/Prediction (# of target files tracked)	N/A	16	/ 16	TBD	16	(Ch-1)
Workstations Operational Availability (HW&SW)	N/A	2	/ 2	2	2	(Ch-1)
Maintenance (HW&SW) Mean Time to Repair (MTTR) (min)	N/A	.80	/ .75	TBD	.85	(Ch-1)
Mean Time to Repair (MTTR) DS/GS (min)	N/A	30	/ 60	TBD	30	(Ch-1)
Interoperability	N/A	60	/ 180	TBD	60	(Ch-1)
Standard IEW Modules	N/A	Rec & transmit messages to TAC-FIRE/AFATDS (to facilitate targeting) and ASAS (to facilitate intelligence reporting and battle-field mgmt)	/ Rec & transmit messages to TAC-FIRE/AFATDS (to facilitate targeting) and ASAS (to facilitate intelligence reporting and battle-field mgmt)	TBD	Rec & transmit messages to TAC-FIRE/AFATDS (to facilitate targeting) and ASAS (to facilitate intelligence reporting and battle-field mgmt)	(Ch-1)
		Std HW & SW	/ Std HW & SW	TBD	Std HW & SW	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Imagery Storage (hrs)	N/A	/		TBD		
		8	8			
		2	2			
Digital Radar				TBD	8	(Ch-1)
Video (analog)				TBD	2	(Ch-1)
Simultaneous Multi-sensor Operations	N/A	Data from 2 or more sensors	/ Data from 2 or more sensors	TBD	Data from 3 or more sensors	(Ch-1)
Two Independent Workstations	N/A	Display MTI, FTI, and SAR data	/ Display MTI, FTI, and SAR data	TBD	Display MTI, FTI, and SAR data	(Ch-1)
Remote Data Display	N/A	Data into existing data process facility	/ Data into existing data process facility	TBD	Data into existing data process facility	(Ch-1)
Hard Copy Data Capability	N/A	Color printout of IMINT, graphics & text	/ Color printout of IMINT data	TBD	Color printout of IMINT, graphics & text	(Ch-1)
Nuclear Survivability	N/A	Hardened against EMP	/ Hardened against EMP	TBD	Hardened against EMP	(Ch-1)
Commander's Tactical Terminal (CTT)	N/A	CTT data interface	/ CTT data interface	TBD	CTT data interface	(Ch-1)
Transportability (Light)	N/A	C-130 drive on, drive off	/ C-130 drive on, drive off	TBD	C-130 drive on, drive off	(Ch-1)
Set up/Tear down (w/3 man crew) (min) (Light) Payload Weight (lbs)	N/A	10	/ 15	TBD	10	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Light	N/A	4250	/ 4400	TBD	4250 (Ch-1)	
Heavy	N/A	7100	/ 8500	TBD	N/A (Ch-1)	
Data Dissemination	N/A	Maintain	/ Maintain and automat- ically dissem- inate current enemy situa- tion graphics	Maintain and automat- ically dissem- inate current enemy situa- tion graphics	TBD	Develop (Ch-1) and deploy in Lt, Med, & Hvy configs
National Imagery Data	N/A	Provide	/ Provide imagery graphs & text through GSM comm links	Provide imagery data through GSM comm links	TBD	Provide (Ch-1) imagery graphs & text through GSM comm links

b. Previous Change Explanations --

Addition of GSM Approved Acquisition Program Baseline characteristics to SAR reporting. IGSM MTBF, MTBOMF, MTTR and Max-TTR have been changed to reflect demonstrated performance. MTBF and MTBOMF changed to reflect demonstrated results achieved during testing of the system. New characteristics were added to reflect approval of revised APB dated 11 August 1993. LGSM MTBOMF changed to 70 hours to correct error in previous SAR. Interoperability message requirements decreased from 19 to 7 due to release of TACFIRE 10 which reduced the number of preformatted msgs available for interface. GSM MTTR, MGSM Wt and Imagery Stg, and LGSM WT adjusted to correct errors in previous SAR. MGSM/LGSM Max Rpr deleted due to revised RAM requirements. HGSM Nuclear Surv deleted as system is no longer required.

c. Current Change Explanations --

(Ch-1) All are new data elements included in the new approved APB of October 5, 1995.

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10d. Performance Characteristics (Cont'd):

d. References --

Development Estimate:

ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:

Approved Acquisition Program Baseline dated October 05, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	452.4	554.7	564.1
Procurement	680.6	651.9	616.9
Recurring Costs	(563.8)		(494.4)
Nonrecurring Costs	(55.6)		(12.9)
Total Flyaway	(619.4)		(507.3)
Other Weapon Systems	(16.2)		(78.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(45.0)		(31.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	1133.0	1206.6	1181.0
 Escalation	 158.6	 271.0	 206.1
Development (RDT&E)	(-4.0)	(27.7)	(25.8)
Procurement	(162.6)	(243.3)	(180.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1291.6	1477.6	1387.1
 b. Quantity --			
Development (RDT&E)	15	21	18
Procurement	<u>97</u>	<u>104</u>	<u>143</u>
Total	112	125	161

The procurement quantities noted above include a total of up to 60 LRIP units (12 Medium GSMs, 10 Light GSMs (8 on contract) and up to 38 CGSs). It should be noted that the Common Ground Station LRIP quantity of 16 units in FY96 exceeds the statutory guideline of 10% for LRIP as a percentage of total production. The maximum number of CGSs that can be procured under LRIP is 38 of a total contract of 137. Although this exceeds the 10% ceiling, it was approved based on the economic advantages as well as the documented low risk to the CGS program.

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11c. Total Program Cost and Quantity (Cont'd):

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- None.
- e. References --

Development Estimate:

ADM dated 8 Mar 89, subject "Joint STARS Ground Station Module (GSM) Acquisition Decision Memorandum".

Approved Program:

Approved Acquisition Program Baseline dated October 05, 1995.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (OCT 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY89\$)	1181.0	1206.6	
(2) Quantity	161	125	
(3) Unit Cost	7.335	9.653	-24.01
b. Procurement			
(1) Cost (BY89\$)	616.9	651.9	
(2) Quantity	143	104	
(3) Unit Cost	4.314	6.268	-31.18

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	448.4	843.2	0.0	1291.6
Previous Changes:				
Economic	+5.8	+68.4	-	+74.2
Quantity	+15.1	+5.2	-	+20.3
Schedule	-	-4.7	-	-4.7
Engineering	+59.7	-8.7	-	+51.0
Estimating	+53.4	-140.2	-	-86.8
Other	-	-	-	-
Support	-	+132.0	-	+132.0
Subtotal	+134.0	+52.0	-	+186.0
Current Changes:				
Economic	-4.1	-42.6	-	-46.7
Quantity	-	176.6	-	+176.6
Schedule	-	-14.4	-	-14.4
Engineering	9.7	-	-	+9.7
Estimating	1.9	-179.5	-	-177.6
Other	-	-	-	-
Support	-	-38.1	-	-38.1
Subtotal	+7.5	-98.0	-	-90.5
Total Changes	+141.5	-46.0	-	+95.5
Current Estimate	589.9	797.2	-	1387.1

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	452.4	680.6	0.0	1133.0
Previous Changes:				
Quantity	+12.1	+19.4	-	+31.5
Schedule	-	+2.7	-	+2.7
Engineering	+50.0	-5.8	-	+44.2
Estimating	+40.2	-132.7	-	-92.5
Other	-	-	-	-
Support	-	+87.7	-	+87.7
Subtotal	+102.3	-28.7	-	+73.6
Current Changes:				
Quantity	-	127.0	-	+127.0
Schedule	-	-	-	-
Engineering	7.7	-	-	+7.7
Estimating	1.7	-122.7	-	-121.0
Other	-	-	-	-
Support	-	-39.3	-	-39.3
Subtotal	+9.4	-35.0	-	-25.6
Total Changes	+111.7	-63.7	-	+48.0
Current Estimate	564.1	616.9	-	1181.0

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.
 Quantity: Increased prototype quantity.
 Engineering: ROC revisions due to Operation Desert Storm lessons learned. Cost adjustments to develop Block II variants. Accelerated Light GSM R&D effort.
 Estimating: Refined and rephased program estimate. Adjustment for current and prior inflation. Revised historical data to reflect actual.

Procurement

Economic: Revised escalation indices.
 Quantity: Quantity increased to 104 GSMS.

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13b. Cost Variance Analysis (Cont'd):

Schedule: Accelerated procurement schedule during FY95-02.
 Delay production schedule FY99 and out.

Engineering: Reduced cost from deleting retrofit Block I Heavy
 variant.

Estimating: Refined program estimate. Adjustment for current
 and prior inflation. Revised hardware cost based
 on LRIP contract award.

Support: Initial spares and support equipment changes.
 Revised estimate for spares/support requirements.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	--	-4.1
Adjustment for current/prior inflation. (Estimating)	+1.7	+1.9
Additional requirements for sensor interface of the CGS system. (Engineering)	+7.7	+9.7
RDT&E Subtotal	<u>+9.4</u>	<u>+7.5</u>
(2) <u>Procurement</u>		
Revised inflation indices. (Economic)	--	-42.6
Adjustment for current/prior inflation. (Estimating)	+3.9	+4.9
Quantity increase of 39, from 104 to 143. (Quantity)	+127.0	+176.6
Adjusted schedule to accomodate change in quantity by year. (Schedule)	--	-14.4
Adjustment to account for actual data based on recent contract award. (Estimating)	-126.6	-184.4
Adjustment to account for reduced requirements based on recent contract award. (Support)	-39.3	-38.1
Procurement Subtotal	<u>-35.0</u>	<u>-98.0</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
11.532	0.171	-2.286	-0.119	0.377	-1.642	--	0.583	-2.916	8.616

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

<u>Block I Light FSD:</u> Motorola, Scottsdale, AZ DAAB07-92-C-L001, CPFF Award: May 29, 1992 Definitized: June 29, 1993	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$22.5	\$22.5	2

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$104.4	N/A	4	\$104.4	\$104.4

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$-3.2	\$-1.0
Cumulative Variances To Date	\$-1.9	\$-0.2
Net Change	\$1.3	\$0.8

Explanation of Change: None.

This will be the last time this contract will appear in the SAR as the work performed exceeds the 90% threshold established by DoD 5000.2.

b. Procurement --

<u>Block I Medium LRIP:</u> Motorola, Scottsdale, AZ DAAB07-93-C-K258, FFP Award: September 30, 1993 Definitized: September 30, 1993	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$55.4	N/A	12

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$62.3	N/A	12	\$62.3	\$62.3

Explanation of Change:

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15. Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

This is the last time this contract will appear in the SAR. The PM has recently accepted delivery of the last end item under this contract thereby meeting the 90% completion criteria as established by DoD 5000.2-M.

<u>LGSM LRIP:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Motorola, Scottsdale, AZ					
DAAB07-95-A-CC, FFP	\$42.9	N/A	8		
Award: July 31, 1995					
Definitized: July 31, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$42.9	N/A	8	\$42.9	\$42.9	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

<u>CGS LRIP:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
Motorola, Scottsdale, AZ					
DAAB07-96-C-S204, FFP	\$70.6	N/A	18		
Award: December 14, 1995					
Definitized: December 14, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$70.6	N/A	18	\$70.6	\$70.6	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 71.4% (15 yrs/21 yrs)
- (2) Percent Program Cost Appropriated: 59.7% (\$827.8 / \$1387.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY82-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2002)	<u>Total</u>
RDT&E	520.1	27.6	9.9	32.3	589.9
Procurement	196.2	83.9	94.2	422.9	797.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	716.3	111.5	104.1	455.2	1387.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1982				5.1	4.1	4.1	4.1	7.6
1983				43.4	36.5	36.5	36.3	4.0
1984				75.0	65.3	65.3	65.2	3.8
1985				30.8	27.7	27.7	27.5	3.4
1986				43.9	40.6	40.6	40.2	2.8
1987				27.2	25.9	25.9	25.1	2.7

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1988				18.9	18.7	18.7	18.2	3.0
1989				22.2	22.9	22.9	21.8	4.2
1990				35.3	37.8	37.8	37.3	4.1
1991				38.8	43.1	43.1	42.4	4.3
1992				59.6	67.8	67.8	67.2	3.0
1993				53.7	62.5	62.5	61.5	2.4
1994				24.8	29.4	29.4	27.7	2.0
1995				31.2	37.8	37.6	27.7	1.9
1996				22.3	27.6	4.3	0.5	2.0
1997				7.8	9.9			2.2
1998				5.6	7.2			2.2
1999				4.6	6.1			2.3
2000				3.6	4.8			2.2
2001				10.3	14.2			2.2
Subtot	18			564.1	589.9	524.2	502.7	

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army

1987	3	2.1	9.8	14.9	14.7	14.7	14.6	2.7
1988	6		16.9	21.3	21.9	21.9	21.7	3.0
1989				2.2	2.4	2.4	2.4	4.2
1990								4.1
1991								4.3
1992								3.0
1993	5	1.0	22.5	29.3	34.9	34.9	32.7	2.4
1994	7	0.2	33.8	52.9	64.0	63.9	44.5	2.0
1995	8	1.7	39.6	47.0	58.3	57.1	5.9	1.9
1996	16	5.3	52.2	66.7	83.9	53.9	0.1	2.0
1997	20	2.1	65.2	73.1	94.2			2.2
1998	20	0.5	65.2	70.9	93.4			2.2
1999	18		58.7	64.8	87.3			2.3
2000	22		71.8	83.7	115.2			2.2
2001	18		58.7	80.0	112.5			2.2
2002				10.1	14.5			2.2
Subtot	143	12.9	494.4	616.9	797.2	248.8	121.9	
Grand								

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY89 Dollars			Program	Obligated	Ex-pended	
		Nonrec	Rec					

Appropriation: 2035 Other Procurement, Army (Cont'd)

Total	161	12.9	494.4	1181.0	1387.1	773.0	624.6
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Recurring costs in FY02 are refurbishment costs for 12 MGSM (FY93,94) and 8 LGSM (FY95). These costs are to upgrade the GSMS to the Common Ground Station (CGS) capability and involves adding sensor interfaces, boards, black boxes, racks & cables etc.. Expenditures and obligations reflect program office records as of 03/08/96.

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	18/18
Procurement	21/21

b. Approved Design-to-Cost Objective -- N/A.

A Design-to-Cost waiver was obtained from HQDA in June 1992 for this program and is therefore not applicable.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

O&S costs were based on LPU & IGSM models being fielded for 5 years. All other GSM models are presumed to have a 20 year life. Sustainment is based on cumulative quantity of fielded systems and appropriate personnel necessary to maintain the system. The source of the O&S data is the January 1995 Joint STARS (Army) Baseline Cost Estimate. There are no antecedent systems.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1989 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost GSM	N/A
Personnel	253.0	N/A
Unit Consumption	139.0	N/A
Other Sustainment	25.0	N/A
Total	417.0	N/A

c. Contractor Support Costs -- None.

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6. Mission and Description:

The Advanced Field Artillery Tactical Data System (AFATDS) is a digital, integrated battlefield management and decision support system. It will function at Battery through Corps and above level as one of the five battlefield automation systems of the Army Tactical Command and Control System (ATCCS) utilizing the Common Operating Environment (COE) architecture. AFATDS utilizes evolving commercial computer technology of the ATCCS Common Hardware/Software (CHS) procurement.

Based on the organizational structure to be supported, AFATDS hardware items will include the following: Fire Support Control Terminals (FSCT), Lightweight Computer Units (LCU), Power Converter Group, Tactical Communications Interface Module, Printer, Tactical Display Device, Local Area Network and installation kits tailored to the Force Structure and available vehicles. This will all be ATCCS Common Hardware.

AFATDS is designed to overcome the vulnerability, limited functionality, central processing and training limitations of present artillery battalion, brigade, division and corps fire direction systems. AFATDS will take advantage of advancing software technology, graphics, decision aids, and embedded training to expand the Fire Support functions. AFATDS is the Fire Support node of the ATCCS providing advanced software automation assistance to the Fire Support elements and interfacing with all subsystems subordinate to AFATDS and other nodes of ATCCS via the standard communications media available to the force. AFATDS will provide 27 Fire Support functions, grouped in five Fire Support operational needs (Fire Support Execution, Fire Support Planning, Movement Control, Field Artillery Mission Support and Field Artillery Fire Direction Operations).

Responsiveness, survivability, and continuity of Fire Support Operations will be enhanced via dispersed processing centers, intelligent remote (work stations) terminals, a distributed data base management system and distributed operations for Fire Support Officers at the Infantry and Armor battalion/brigade levels. AFATDS will interface/interoperate via standard communications media with all functional control elements of existing and future Army Fire Support Systems, other ATCCS Battlefield Functional Area (BFA) Systems, other services employing Fire Support Joint Interoperability Tactical Command and Control Systems message standards and Allied Forces using NATO Fire Support Standards.

Fire Support Ada Conversion (FSAC) and Initial Fire Support Automated System (IFSAS) are associated programs that are included in the AFATDS Acquisition Program Baseline (APB).

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6. Mission and Description (Cont'd):

FSAC provided an accelerated fielding of ATCCS Common Hardware (CH) until the AFATDS software becomes available. FSAC converted the existing Battery Computer System (BCS) technical fire control software to Ada and replaced the existing BCS hardware with the Lightweight Computer Unit (LCU). These LCUs will ultimately be utilized as a host for the AFATDS software.

IFSAS replaced the Variable Format Message Entry Device (VFMED) and Battalion TACFIRE and provided the National Guard with an initial automated capability. IFSAS replaced the TACFIRE equipment with the LCU based AN/GYK-37(V)1 hardware with Lightweight TACFIRE (LTACFIRE) software ported to the LCU. Like FSAC, IFSAS reflects an accelerated fielding of the ATCCS CHS until AFATDS software becomes available. IFSAS is being fielded by the Marine Corps under a separate program.

7. Program Highlights:

a. Significant Historical Developments -- None.

b. Significant Developments Since Last Report --
In 1995 the AFATDS program completed development of Version 1 software, underwent both a second Force Development Test and Experimentation (FDTE II) and Initial Operational Test and Evaluation, and received its Milestone III Production Approval.

The contractor, Magnavox, concentrated on correcting errors and optimizing the Version 1 software. FDTE II was held in May 95 and, although a number of software deficiencies were identified, the system showed significant improvement from the initial FDTE held in 1994. With completion of Regression Testing by the end of May, all significant errors had been identified and corrected. There were a few open System Test Reports (STR) that remained, but it was determined that they would have no impact on the IOTE, and would be corrected under a separate software release.

IOTE was conducted in Aug 95 at Ft Hood Tx, based on the Test and Evaluation Master Plan (TEMP) which was signed 5 Aug. The test was conducted by TEXCOM and evaluated by OPTEC. Four issues resulted from the test: availability of generator power which will be corrected with the Tactical Quiet Generator; a doctrine issue which will be corrected through Tactics, Techniques, and Procedures; and 2 software issues which have been since corrected.

Based upon the recommendation of the Military Deputy Review held 1 Dec, the AAE determined that a formal ASARC was not required and authorized proceeding with full rate production and fielding of AFATDS. On 13 Dec 95, the Army Acquisition Executive (AAE) signed the Acquisition Decision Memorandum (ADM) for the AFATDS Milestone

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7b. Program Highlights (Cont'd):

III. The ADM also approved the type classification of AFATDS as Standard, the continued development of the AFATDS software to reach the objective program, and confirmed the Program Executive Officer, Command, Control, and Communications Systems (PEO C3S) as the decision authority for future hardware acquisitions.

Version 2 development proceeded on schedule through 95. The effort was rebaselined to reflect the reprioritization of functionality over the remaining versions, and the incorporation of the Army's Common Operating Environment (COE). In addition, the software versions were redesignated as Software Releases to better reflect the current strategy of releasing software to the field in annual increments, instead of the previous plan to release software versions every two years. There was no change in the overall functionality included in the system.

AFATDS also participated in exercises and tests across the world. In Aug, one direct support artillery battalion and one MLRS platoon from the AFATDS IOTE test unit (1st CAV) were deployed to Kuwait. These units took AFATDS with them as their go-to-war system. AFATDS participated in the Joint Intrinsic Action Exercise in Kuwait. Intrinsic Action culminated in a Coalition Combined Arms Live Fire Exercise with US and Kuwaiti Army forces and US and Kuwaiti Close Air Support controlled by the 1st ANGLICO, 1st US Marine Expeditionary Force. The demonstration was observed by the Chief of Staff of the Kuwaiti Army, the US Ambassador to Kuwait, and other high ranking civilian and military officials.

Technical testing was performed with the fire support control systems from Britain (BATES), Germany (ADLER), and France (ATLAS) in Oct 95. This testing demonstrated the ability of the systems to pass messages, and to plan and execute fire missions across various interfaces.

AFATDS also became more involved in the joint arena. PM FATDS is actively participating in the Naval Surface Fire Support (NSFS) demonstrations. The objective is to demonstrate the initial capability to automate the NSFS functions in an amphibious landing and Joint Force Operations. The demonstrations will prove out AFATDS capability to perform a large portion of the NSFS function and to identify capabilities for future incorporation. AFATDS interface to the Air Force Contingency Theater Automated Planning System (CTAPS) was briefed to the Chiefs of Staff of the Army and Air Force as part of the Army Air Force Warfighter Talks. There was support for the AFATDS link to CTAPS which will provide an automated mechanism for the Army Battle Command System to transmit and receive the Air Tasking Orders.

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7b. Program Highlights (Cont'd):

AFATDS is actively involved in Task Force XXI which will digitize the battlefield and provide seamless digital command and control capabilities throughout the fighting force. AFATDS will be fielded to the 4th Infantry Division in FY96 to prepare for Task Force exercises.

The FSAC and IFSAS programs continued fielding and training in accordance with the DCSOPS approved fielding plans.

AFATDS is expected to satisfy the mission requirements.

c. Changes Since As Of Date --

After the current Acquisition Program Baseline was approved, the requirements for the Battlefield Coordination Element, Prepositioned Material (POMCUS) and the National Training Center were added by the Office of Deputy Chief of Staff for Operations and Plans (ODCSOPS). These changes have affected the program cost and schedule.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 5 Feb 96. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development <u>Estimate</u>	Approved <u>Program;PdE</u>	Current <u>Estimate</u>
Concept Evaluation (CE) Contract Award	MAY 84	N/A	MAY 84
Common HW/SW (CHS) Contract Award	AUG 88	N/A	AUG 88
CHS Initial Prototype (V1) Delivery	NOV 88	N/A	NOV 88
Software Formal Qualification Test Complete	JAN 89	N/A	JAN 89
User Concept Evaluation:			
Begin	MAR 89	N/A	MAR 89
Complete	APR 89	N/A	APR 89
CHS Initial Ruggedized (V2) Delivery	JUN 89	N/A	JUN 89
ASARC II	JUL 89	N/A	JUL 89
DAB	SEP 89	N/A	SEP 89
Congressional Report	SEP 89	N/A	SEP 89
Full Scale Development Contract	APR 90	N/A	APR 90
Preliminary Design Review (PDR) V1 (Start)	JUN 91	N/A	JUN 91
Critical Design Review (CDR) V1 (Start)	MAY 92	N/A	JUN 92

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
Version 2 SW Development Begin	MAY 92	N/A	OCT 92
CHS Hardware Order (AFATDS Training Base)	NOV 92	N/A	JAN 94
V3 Acquisition Alternative Selection	DEC 92	N/A	JUN 93
System Software Test V1	MAY 93	N/A	NOV 93
CHS Hardware Delivery (AFATDS Training Base)	JUN 93	N/A	JUN 94
Force Development Test and Experimentation (FDT&E) -- Complete	JUL 93	N/A	FEB 94
First Unit Equipped (FUE) V1	SEP 93	AUG 95	AUG 95
Preliminary Design Review V2 (Start)	NOV 93	N/A	N/A
System Design Review V2.0			N/A (Ch-1)
IOTE:			
Begin	JAN 94	AUG 95	JUL 95
Complete	FEB 94	SEP 95	SEP 95 (Ch-2)
ASARC -- Milestone III	APR 94	DEC 95	DEC 95 (Ch-2)
C3I Committee Review	N/A	N/A	N/A (Ch-2)
CDR V2 (Start)	JUN 94	N/A	N/A
Version 3 SW Development -- Begin	NOV 94	N/A	N/A (Ch-1)
System Software Test V2	JAN 95	N/A	N/A
System Design Review V2.1			N/A (Ch-1)
Initial Operational Capability (V1)	JAN 95	JAN 97	AUG 96 (Ch-3)
Multi-Service OT	N/A	JAN 98	JAN 98 (Ch-4)
Software Release AFATDS '97	N/A	AUG 97	AUG 97 (Ch-1)
Software Release AFATDS '98	N/A	AUG 98	AUG 98 (Ch-1)
Software Release AFATDS '99	N/A	AUG 99	AUG 99 (Ch-1)
Software Release AFATDS '00	N/A	SEP 00	SEP 00 (Ch-1)
System Software Test V2.0			N/A (Ch-1)
Operational Test V2.0 (Start)			N/A (Ch-1)
System Software Test V2.1			N/A (Ch-1)
Operation Test V2.1			N/A (Ch-1)
FDTE V2	MAR 95	N/A	N/A
FUE V2	MAY 95	N/A	N/A
FOTE V2:			
Begin	MAY 95	N/A	N/A
Complete	JUL 95	N/A	N/A
Fielding Total Force -- Start (V2)	SEP 95	N/A	N/A
Fielding Total Force - Start (V1)	N/A	JAN 97	AUG 96 (Ch-3)
Complete Active Force	N/A	MAY 01	JUL 01 (Ch-5)
Complete Total Force	N/A	JAN 07	APR 07 (Ch-5)

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9b. Schedule (Cont'd):

b. Previous Change Explanations --

The CHS Hardware Order changed from Nov 92 to Oct 93, and the CHS Hardware Delivery changed from Jun 93 to Apr 94 due to the elimination of FY93 Procurement funds. The milestones slipped again to Jan/Jan 94, respectively, due to the late release of funds.

FDTE Complete was rescheduled from Jul 93 to Feb 94. IOTE Begin and Complete moved from Jan 94 to Jul 95 and Feb 94 to Aug 95, respectively. The ASARC Milestone III moved from Apr 94 to Nov 95. Based on the contract negotiations for AFATDS V1, the FDTE test window was Jun/Jul 93. After contract award the Vice Chief of Staff established prescribed test windows for ATCCS testing with III Corps assets at Fort Hood to preclude perturbations to the warfighting mission of III Corps units in FY93. The test windows were May/June and Sept/Oct. The AFATDS V1 schedule precluded participation in the May/June 93 test window. As such, the AFATDS V1 FDT&E was moved to the Sept/Oct 93 test window. However, agreements at the AFATDS Operational Test Readiness Review, held Aug 93 at Ft Sill, moved the FDTE start date from Oct 93 to Jan 94 to allow time to develop quality training for FDTE test personnel. Further schedule adjustments were made to correct deficiencies in the FDTE. Current estimates for FUE IOTE, ASARC, IOC, C3I Committee Review, IOC V1 and Fielding Total Force were adjusted accordingly.

The First Unit Equipped V1 moved from Sep 93 to Aug 95. FUE for Version 1 was originally scheduled for Sep 93 to coincide with the completion of FDTE (DCSOPS guidance). FUE is now scheduled to coincide with the last month of the system testing, i.e., IOTE V1 (Aug 95) and is consistent across all BFA's.

The Initial Operational Capability V1 moved from Jan 95 to Jul 96. The prior IOC was based on refurbishment of test units and planned for Jan 95. The IOC changed based on the first production unit fielded after M/S III, scheduled for Jul 96.

The Version 1 development effort was delayed due to unexpected complexity in the software design. Version 1 milestones were adjusted as follows: Critical Design Review (CDR) V1 occurred in Jun 92 vice May 92 and System Software Test (SST) V1 occurred in Nov 93 vice May 93.

The development strategy for Version 2 was changed to expedite software upgrades and to provide more timely improvements to the field. This change resulted in Version 2 being developed in two separate packages: Version 2.0 and Version 2.1. Accordingly, several Version 2 milestones have been deleted from the APB:

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9b. Schedule (Cont'd):

Preliminary Design Review (Jun 94), Critical Design Review (Jan 95), System Software Test (Sep 95), Force Development Test and Experimentation (Jan 96) and First Unit Equipped (Jun 96). Additionally, several milestones have been added to the baseline to detail the Version 2.0 and Version 2.1: Version 2.0 System Design Review (Jan 95), Version 2.0 System Software Test (Feb 97), Version 2.0 Operational Test (Aug 97), Version 2.1 System Design Review (Jan 96) Version 2.1 System Software Test (Feb 98) and Version 2.1 Operational Test (Aug 98).

The V3 Acquisition Alternative Selection changed from Dec 92 to Apr 93 to allow for Government review of the quality of Version 1 software prior to determining the V3 acquisition strategy. The milestone was actually accomplished in Jun 93.

Version 3 Software Development - Begin changed from Nov 94 to Jul 97 because of delays in Version 1 completion which also delayed subsequent versions of the software development.

c. Current Change Explanations --

(Ch-1) Version 2.0, 2.1 and 3 have been redesignated AFATDS '97, '98, '99 and '00 to better reflect the planned release of software functionality. The following milestones are no longer applicable: System Design Review V2.0; Version 3 SW Development-Begin; System Software Test V2.0; Operational Test V2.0; System Software Test V2.1; Operational Test V2.1. The following milestones have been added: Software Release AFATDS '97; Software Release AFATDS '98; Software Release AFATDS '99; Software Release AFATDS '00.

(Ch-2) The IOTE was completed Sep 95. ASARC occurred Dec 95. These milestones were expected to be completed Aug and Nov 95 respectively. The MILDEP was briefed 1 Dec 95 for the AFATDS Milestone III Decision. The MILDEP waived the requirement for a formal ASARC at that time. The requirement for the C3I Committee Review was also waived, therefore the milestone previously identified as Nov 95 is now shown as N/A.

(Ch-3) The following milestones were changed to match the planned fielding of the 2nd AD:

	From	To
IOC	Jul 96	Aug 96
Fielding Total Force Start	Jul 96	Aug 96

(Ch-4) Multi-Service Operational Test (Jan 98), the joint Army and Marine Corps test of functionality of the AFATDS '97 Release, was added.

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9c. Schedule (Cont'd):

(Ch-5) Requirements for BCE and POMCUS were added by DCSOPS which affect the following milestones:

	From	To
Fielding Complete Active Force	May 01	Jul 01
Fielding Complete Total Force	Jan 07	Apr 07

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program;PdE:

AAE Approved Acquisition Program Baseline dated February 05, 1996.

10. Performance Characteristics:

a. Performance --	DE	Approved Program;PdE <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>	
MTBF-Hardware (hrs)			N/A	N/A	
Fire Support Control Terminal (FSCT)	636		N/A	N/A	
Fire Support Terminal (FST)	1000		N/A	N/A	
MTR-System - Unit Level (min)					
FSCT	20		N/A	N/A	
FST	20		N/A	N/A	
MIPS (Million Instructions per sec)					
FSCT	12		N/A	N/A	
FST	12		N/A	N/A	
Internal Memory (Megabytes)					
FSCT	16		N/A	N/A	
FST	16		N/A	N/A	
System Ao- (Wartime) (Operating 24 hrs/day for 108 hours)					
Version 1	0.90		.95	.90	
Version 2	0.90	N/A / N/A	N/A	N/A	(Ch-1)
Version 3	0.90	N/A / N/A	N/A	N/A	(Ch-1)
Objective	N/A	0.90 / 0.88	TBD	.90	(Ch-1)
Fire Mission Processing Peak Load (Fire Missions/hr)					
Version 1	247		338	247	

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program; PdE Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Version 2	513	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	780	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	780	/ 720	TBD	780	(Ch-1)
Fire Mission Processing Speed (secs)						
Version 1	14.5			N/A	N/A	
Version 2	7.0			N/A	N/A	
Version 3	4.6			N/A	N/A	
Power Requirements (KW)						
FSCT	1.4			N/A	N/A	
FST	0.8			N/A	N/A	
Sustainment of Operation During Power Loss (min)	5			TBD	5	
Emergency Purge (min)	2	N/A	/ N/A	N/A	N/A	(Ch-2)
Set-up/Tear-down (min)	10			TBD	10	
Weight in Pounds (Less Radios)						
FSCT	400			N/A	N/A	
FST	243			N/A	N/A	
Operating Temperature (deg F)	0-120			0-120	0-120	(Ch-3)
Process Combat Information Message (per hour)						
Version 1	N/A	N/A	/ N/A	226	323	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	970	/ 895	TBD	970	(Ch-1)
Develop Orders to Fire (per hour)						
Version 1	N/A	N/A	/ N/A	386	359	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	1078	/ 995	TBD	1078	(Ch-1)
Establish and Update Battlefield Geometry (min)						
Version 1	N/A	N/A	/ N/A	1	1	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program; PdE Objective/Threshold		Demonstrated Perf	Current Estimate	
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	1	/ 2	TBD	1	(Ch-1)
Change Attack Guidance (min)						
Version 1	N/A	N/A	/ N/A	1	2	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	2	/ 3	TBD	2	(Ch-1)
Coordinate Movement Request with Maneuver (min)						
Version 1	N/A	N/A	/ N/A	1	4.6	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	3	/ 4	TBD	3	(Ch-1)
Prepare Quick Fire Plan (min)						
Version 1	N/A	N/A	/ N/A	5	10	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	10	/ 15	TBD	10	(Ch-1)
Process Field Artillery Sensor Tasking Order (min)						
Version 1	N/A	N/A	/ N/A	1	4	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	1.3	/ 1.5	TBD	1.3	(Ch-1)
Process Fire Support Coordination Measure (FSCM) (min)						
Version 1	N/A	N/A	/ N/A	1	2	
Version 2	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Version 3	N/A	N/A	/ N/A	N/A	N/A	(Ch-1)
Objective	N/A	2	/ 3	TBD	2	(Ch-1)

b. Previous Change Explanations --

Hardware related parameters such as MTBF, MTR, MIPS, power and weight were deleted in the Oct 92 APB as they reflect performance characteristics of the ATCCS Common Hardware Software.

System specific software parameters were added in the Oct 92 APB to

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10b. Performance Characteristics (Cont'd):

reflect the technical characteristics of the AFATDS functional software as identified in program requirements documentation.

c. Current Change Explanations --

(Ch-1) Per the Approved Program, all technical parameters formerly identified by version have been deleted and replaced by the objective system parameter.

(Ch-2) Emergency Purge has been changed from 2 to deleted because this parameter cannot be measured nor confirmed.

(Ch-3) Demonstrated value for Operating Temperature changed from TBD to 0-120 based on results obtained in the Initial Operational Test and Evaluation, Aug 95.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program; PdE:

AAE Approved Acquisition Program Baseline dated February 05, 1996.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program; PdE</u>	Current <u>Estimate</u>
Development (RDT&E)	455.6	560.0	561.5
Procurement	547.8	535.9	559.0
Flyaway	(395.8)		(412.6)
Other Weapon System	(101.7)		(117.6)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(50.3)		(28.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	1003.4	1095.9	1120.5
 Escalation	 48.7	 45.7	 41.1
Development (RDT&E)	(-33.3)	(-33.8)	(-25.7)
Procurement	(82.0)	(79.5)	(66.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1052.1	1141.6	1161.6

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11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Development <u>Estimate</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
Development (RDT&E)	137	63	63
Procurement	<u>3184</u>	<u>5191</u>	<u>5266</u>
Total	3321	5254	5329

Note: Excludes 142 RDTE prototypes from the SAR Baseline and 63 from the Current Estimate that are not considered fully configured.

The AFATDS Unit of Measure is computer terminals, which includes both the Fire Support Control Terminals (FSCT) and Lightweight Computer Terminals (LCU). Procurement quantities reflect 1652 Fire Support Control Terminals and 3762 Lightweight Computer Units. Quantities do not reflect peripheral equipment associated with the AFATDS system.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 15 August 1990.

Approved Program:PdE:

AAE Approved Acquisition Program Baseline dated February 05, 1996.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (FEB 96 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY96\$)	1120.5	1095.9	
(2) Quantity	5329	5254	
(3) Unit Cost	0.210	0.209	0.81

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY96\$)	559.0	535.9	
(2) Quantity	5266	5191	
(3) Unit Cost	0.106	0.103	2.82

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	422.3	629.8	0.0	1052.1
Previous Changes:				
Economic	-6.0	-7.0	-	-13.0
Quantity	-	+161.8	-	+161.8
Schedule	+8.5	+19.1	-	+27.6
Engineering	-	-	-	-
Estimating	+94.8	-166.1	-	-71.3
Other	-	-	-	-
Support	-	-20.2	-	-20.2
Subtotal	+97.3	-12.4	-	+84.9
Current Changes:				
Economic	-0.9	-20.4	-	-21.3
Quantity	-	-10.9	-	-10.9
Schedule	-0.9	2.8	-	+1.9
Engineering	-	-	-	-
Estimating	18.0	13.2	-	+31.2
Other	-	-	-	-
Support	-	23.7	-	+23.7
Subtotal	+16.2	+8.4	-	+24.6
Total Changes	+113.5	-4.0	-	+109.5
Current Estimate	535.8	625.8	-	1161.6

AFATDS, December 31, 1995

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	455.6	547.8	0.0	1003.4
Previous Changes:				
Quantity	-	+146.2	-	+146.2
Schedule	-4.3	-	-	-4.3
Engineering	-	-	-	-
Estimating	+86.3	-142.7	-	-56.4
Other	-	-	-	-
Support	-	-25.4	-	-25.4
Subtotal	+82.0	-21.9	-	+60.1
Current Changes:				
Quantity	-	-7.5	-	-7.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	23.9	20.8	-	+44.7
Other	-	-	-	-
Support	-	19.8	-	+19.8
Subtotal	+23.9	+33.1	-	+57.0
Total Changes	+105.9	+11.2	-	+117.1
Current Estimate	561.5	559.0	-	1120.5

b. Previous Change Explanations --

RD&E

Economic: Revised escalation indices; Economic Adjustment for Negative Program Change.

Schedule: Revised schedule due to funding profile changes.

Estimating: Adjustment for Current and Prior Inflation; Additional funding to continue program in FY98 and FY99; Additional funds for software development including Version 1 contract cost growth and revised requirements for subsequent versions; Additional funds for OPTEC IOTE; Additional funds for FSATS, Decreased engineering and management support requirements.

AFATDS, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised escalation indices; Economic Adjustment for Negative Program Change.

Quantity: Quantity increase from 3184 to 5414 due to additional deployment requirement; change in force structure; additional training base requirements.

Schedule: Revised schedule due to funding revisions.

Estimating: Adjustment for Current and Prior Inflation; contractual cost changes due to revised pricing methodology, changes in CHS nonrecurring cost guidance; increased project management and software cost associated with IFSAS and AFATDS revised schedule.

Support: Changes due to reprogrammed funding for Total Package Fielding costs; Increased fielding and training requirements; Increased cost for spares; Decrease in support cost per revised CHS pricing guidance; Adjustment for Current and Prior Inflation.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDTE</u>		
Revised escalation indices. (Economic)	N/A	-0.6
Economic adjustment for negative program change. (Economic)	N/A	-0.3
Adjustment for Current and Prior Inflation (Estimating)	-6.2	-5.2
Acceleration of RDTE funding profile (Schedule)	--	-0.9
Increased cost of software development (Estimating)	+20.6	+23.2
Effect of lower inflation rates on the SAR Development Estimate. (Estimating)	+9.5	--
RDT&E Subtotal	<u>+23.9</u>	<u>+16.2</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-21.5
Economic adjustment for negative program change. (Economic)	N/A	+1.1
Adjustment for Current and Prior Inflation. (Estimating)	-1.5	-1.5

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Support)	+0.9	+0.9
Total variance associated with decrease of 148 units from 5414 to 5266.	-7.5	-10.9
Decrease of 34 FSCT from 1652 to 1618 due to change in employment concept (Quantity)	-3.6	-5.2
Decrease of 115 LCUs for 2912 to 2797 due to change in employment concept (Quantity)	-3.9	-5.7
Change in annual procurement profile due to funding adjustment. (Schedule)	--	+2.8
Increase in recurring cost due to changes in cost methodology (Estimating)	+10.8	+14.7
Effect of lower inflation rates on the SAR Development Estimate. (Estimating)	+11.5	--
Increase in support costs due to changes in fielding, training, and spares requirements. (Support)	+18.9	+22.8
Procurement Subtotal	+33.1	+8.4

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.317	--	--	--	--	--	--	--	--	0.317

b. Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.317	-0.006	-0.092	0.006	--	-0.008	--	0.001	-0.099	0.218

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15. Contract Information (Then-Year Dollars in Millions):

a. EDT&E --

			Initial Contract Price		
<u>AFATDS V1:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Magnavox Government, Fort Wayne, IN					
DAAB07-90-C-E708, CPAF/FP					
Award: April 27, 1990					
Definitized: April 27, 1990					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$81.9	\$0.0	1	\$112.0	\$112.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-24.4	\$-0.3	
Cumulative Variances To Date (12/29/95)			\$-28.8	\$-0.1	
Net Change			\$-4.4	\$0.2	

Explanation of Change:

The unfavorable cost variance is due to additional costs incurred to optimize the V1 software and perform regression testing. The favorable schedule variance reflects the contract completion. The Version 1 effort is essentially complete therefore this contract will no longer be reported in the SAR.

			Initial Contract Price		
<u>AFATDS V2:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Magnavox Ele. Sys. Co, Ft Wayne, IN					
DAAB07-90-C-E708, CPAF/FP					
Award: October 28, 1992					
Definitized: N/A					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$50.4	\$0.0	1	\$51.2	\$51.2	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date (12/29/95)			\$-9.5	\$-9.7	
Net Change			\$-9.5	\$-9.7	

Explanation of Change:

The contract effort was rebaselined in Dec 95 with no cost change. As part of the rebaseline effort, schedule and performance were set equal to actuals, causing cumulative variances to be equal to 0. The unfavorable cost and schedule variances will be explained in the next SAR.

AFATDS, December 31, 1995

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 59.3% (16 yrs/27 yrs)
- (2) Percent Program Cost Appropriated: 48.5% (\$563.5 / \$1161.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY81-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	349.3	35.6	39.5	111.4	535.8
Procurement	150.1	28.5	34.7	412.5	625.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	499.4	64.1	74.2	523.9	1161.6

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1981				2.2	1.4	1.4	1.4	10.6
1982				2.6	1.7	1.7	1.7	7.6
1983				4.8	3.3	3.3	3.3	4.0
1984				21.3	15.3	15.3	15.3	3.6
1985				31.9	23.6	23.6	23.6	3.4
1986				21.7	16.5	16.5	16.5	2.8

AFATDS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1987				9.2	7.2	7.2	7.2	2.7
1988				13.6	11.1	11.1	11.1	3.0
1989				20.1	17.1	17.1	17.1	4.2
1990				32.5	28.7	28.7	28.7	4.1
1991				43.8	40.1	40.1	40.1	4.3
1992				52.4	49.1	49.1	49.1	3.0
1993				42.0	40.3	40.3	40.3	2.4
1994				44.2	43.2	43.2	40.2	2.0
1995				50.8	50.7	47.3	40.3	1.9
1996				34.9	35.6	27.5	5.0	2.0
1997				37.9	39.5			2.2
1998				8.8	9.4			2.2
1999				6.5	7.1			2.3
2000				3.1	3.4			2.2
2001				3.0	3.4			2.2
2002				25.3	29.4			2.2
2003				25.0	29.7			2.2
2004				23.9	29.0			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expanded	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

Subtot	63			561.5	535.8	373.4	340.9	
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Appropriation: 2035 Other Procurement, Army

1988		10.4		10.4	8.8	8.8	8.8	3.0
1989								4.2
1990								4.1
1991								4.3
1992	276	4.6	12.2	17.7	17.0	17.0	17.0	3.0
1993	131	3.0	6.9	12.4	12.2	12.2	12.2	2.4
1994	866	9.6	32.3	51.6	51.4	51.4	44.8	2.0
1995	179	2.3	16.0	21.9	22.4	20.4	11.8	1.9
1996	319	0.1	19.7	27.5	28.5	11.2	0.7	2.0
1997	110	1.6	18.6	32.7	34.7			2.2
1998	207	0.5	21.7	34.4	37.3			2.2
1999	226	1.4	24.3	37.0	41.0			2.3
2000	273	0.8	26.2	37.8	42.9			2.2
2001	191	0.5	23.6	38.8	44.9			2.2
2002	226	2.4	27.0	37.7	44.7			2.2

AFATDS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2003	245	1.9	24.7	35.9	43.4		2.2
2004	361		24.8	34.7	42.9		2.2
2005	276	1.7	21.7	35.4	45.4		2.2
2006	369	0.9	25.5	34.5	44.6		2.2
2007	160		13.3	19.2	25.4		2.2
Subtot	4415	41.7	338.5	519.6	587.5	121.0	95.3
Army	4478	41.7	338.5	1081.1	1123.3	494.4	436.2

Appropriation: 0350 National Guard & Reserve Equipm, Defense

1992	498	3.6	14.9	21.5	20.6	20.6	3.0
1993	353	2.0	10.4	12.9	12.7	12.7	2.4
1994		1.5		5.0	5.0	5.0	2.0
Subtot	851	7.1	25.3	39.4	38.3	38.3	
DoD	851	7.1	25.3	39.4	38.3	38.3	
Grand Total	5329	48.8	363.8	1120.5	1161.6	532.7	436.2

AFATDS, December 31, 1995

17. Production Rate Data:

a. Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	63/63
	Procurement	2303/2303

b. Approved Design-to-Cost Objective -- N/A.

The AFATDS will utilize Common Hardware equipment. There is no Design-to-Cost Objective for the program.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The O&S costs are to operate and maintain the AFATDS system, based on a peacetime operating tempo of 1800 hrs/yr. The costs are based on an operating life of 20 years, with a reprocurement of the CHS hardware after 10 years. The CHS will be contractor maintained above the unit level. Costs are from the AFATDS Army Cost Position, Nov 95. Military personnel costs are based on the AFATDS Manpower Estimate Report (MER), May 95. Costs are shown per division.

The AFATDS will replace the TACFIRE/LTACFIRE systems and associated Fire Support hardware. The costs shown were provided by the Field Artillery School (USAFAS), Ft Sill, and reflect TACFIRE support costs only.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per DIVISION	Avg Annual Cost Per TACFIRE SYSTEM
Military Personnel	14.4	18.2
Other	5.0	17.8
Total	19.4	36.0

AFATDS, December 31, 1995

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Eng/Tech Sevices	0.3	---	---	---	0.3
Total	0.3	---	---	---	0.3

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: AV-8B REMANUFACTURE

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
AV-8B/Attack, V/STOL, Close Air Support (Harrier II+ Remanufacture)
2. (U) DoD Component: Navy
3. (U) Responsible Office and Telephone Number:
1411 Jefferson Davis Highway COL Judson Mason
Arlington, VA 22243-5120 Assigned: February 15, 1995
AV 664-2238 X7134
COMM (703) 604-2238 X7134
4. (U) Program Elements/Procurement Line Items:

PROCUREMENT:
APPN 1506 ICN 0124 (Navy)
5. (U) Related Programs:
None.

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~~Classified by [redacted]~~
~~Derived from [redacted]~~
~~Declassify on: [redacted]~~

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AS AMENDED

AV-8B REMANUFACTURE, December 31, 1995

6. (U) Mission and Description:

The AV-8B (Harrier II) is a second generation, Vertical/Short Take-off and Landing (V/STOL) light-attack jet aircraft utilized by the Marine Corps. The primary mission of the AV-8B is to provide responsive close air support for the ground forces. This single-piloted, advanced V/STOL aircraft can operate from short fields, forward sites, roads and surface ships providing minimum response time to target.

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) Program Highlights:

a. (U) Significant Historical Developments -- None.

b. (U) Significant Developments Since Last Report --
The AV-8B Remanufacture program is expected to meet all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no Numm McCurdy unit cost breaches. There is a 10.7% breach to the total procurement (BY\$) cost as currently approved in the Acquisition Program Baseline dated 30 June 1994. This breach is the result of cumulative increases in the areas of Engineering Change Proposals (ECPs) and Integrated Logistics Support (ILS). Total ECP costs increased because of unanticipated safety ECPs, increased capability requirements (including JDAM, Automatic Target Handoff System, ARC-210 ECCM Radio and mandated incorporation of Global Positioning System by FY 2000). Total ILS costs increased because of delays in most ILS procurements until the end of the program (FY 1999/FY 2000). ILS cost growths are due to escalation associated with the delayed procurements and small quantity near term ILS

AV-8B REMANUFACTURE, December 31, 1995

8. (U) Threshold Breaches (Cont'd):

procurements which cover range but not depth requirements.

A Program Deviation Report and revised Acquisition Program Baseline are being prepared.

9. (U) Schedule:

a. (U) Milestones --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/III Review	JAN 94	JAN 94	MAR 94
Contract Award	FEB 94	FEB 94	MAY 94
First A/C delivery	FEB 96	FEB 96	JAN 96
DT-III			
Start	FEB 96	FEB 96	FEB 96
Complete	AUG 96	AUG 96	AUG 96
OT-IIIIB FOT&E			
Start	FEB 96	FEB 96	FEB 96
Complete	SEP 96	SEP 96	SEP 96
IOC (Completion of FOT&E Report)	DEC 96	DEC 96	DEC 96
FOC (Delivery of the 20th REMAN acft)	MAR 99	MAR 99	MAR 99
Material Support Date 1/	MAR 99	MAR 99	MAR 99
Navy Support Date 2/	MAR 99	MAR 99	MAR 99

1/ (Milestone IV APB - 06/30/94) Material Support Date for Night Attack/Radar program is planned for April 1995.

2/ (Milestone IV APB - 06/30/94) Navy Support Date for Night Attack/Radar program is planned for April 1996.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Dimensions				
Length	47.97	47.97 / 47.97	TBD	47.97
Height	11.65	11.65 / 11.65	TBD	11.65
Span	30.33	30.33 / 30.33	TBD	30.33
Weight Empty (lbs)	14,700	14,700 / 14,730	TBD	14,700
Max VTOGW Wt (lbs) (Vertical Take-off Gross Weight)	19,200	19,200 / 19,200	TBD	19,200
Max STOGW Wt (lbs)	29,750	29,750 / 29,750	TBD	29,750
Speed Max. (Mach)	.83	.83 / .83	TBD	.83
Mission Radius (nm)				
CAS	142	142 / 95	TBD	142
Interdiction	486	486 / 440	TBD	486
Reliability (hrs)				
MFHBMCF(HW) - Oper	12.6	12.6 / 12.6	TBD	12.6
Maintainability (hrs)				
MMH/FH(HW) Oper	3.2	3.2 / 3.2	TBD	3.2
MTR (Critical)	6.7	6.7 / 6.7	TBD	6.7

(b)(1)

Air-to-Air Det Range				
(5 sq.m. tgt) (nm)				
Nose, VS 1000 (ft)	8	8 / 8	TBD	8
Tail, RWS 2000 (ft)	80	80 / 65	TBD	80

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated June 30, 1994.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

a. (U) Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	0.0	0.0	0.0
Procurement	1843.0	1843.0	2041.0
Airframe	(1163.2)		(1226.3)
Engine	(310.6)		(297.1)
Avionics	(37.2)		(42.2)
Other GFE	(1.1)		(1.3)
Total Flyaway	(1512.1)		(1566.9)
Other Wpn Sys Cost	(0.0)		(0.0)
Peculiar Support	(248.3)		(364.3)
Initial Spares	(82.6)		(109.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	1843.0	1843.0	2041.0
 Escalation	 315.4	 315.4	 277.3
Development (RDT&E)	(0.0)	(0.0)	(0.0)
Procurement	(315.4)	(315.4)	(277.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2158.4	2158.4	2318.3

- b. (U) Quantity --
- | | | | |
|---------------------|-----------|-----------|-----------|
| Development (RDT&E) | 0 | 0 | 0 |
| Procurement | <u>73</u> | <u>73</u> | <u>72</u> |
| Total | 73 | 73 | 72 |
- c. (U) Foreign Military Sales/International Cooperative Programs -- None.
- d. (U) Nuclear Costs -- None.
- e. (U) References --

(U) Production Estimate:
NAE Approved Acquisition Program Baseline dated June 30, 1994.

(U) Approved Program:
NAE Approved Acquisition Program Baseline dated June 30, 1994.

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AV-8B REMANUFACTURE, December 31, 1995

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY94\$)	2041.0	1843.0	
(2) Quantity	72	73	
(3) Unit Cost	28.347	25.247	12.28
b. (U) Procurement			
(1) Cost (BY94\$)	2041.0	1843.0	
(2) Quantity	72	73	
(3) Unit Cost	28.347	25.247	12.28

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	2158.4	0.0	2158.4
Previous Changes:				
Economic	-	-5.0	-	-5.0
Quantity	-	-20.9	-	-20.9
Schedule	-	+62.3	-	+62.3
Engineering	-	-	-	-
Estimating	-	-14.8	-	-14.8
Other	-	-	-	-
Support	-	+96.3	-	+96.3
Subtotal	-	+117.9	-	+117.9
Current Changes:				
Economic	-	-87.7	-	-87.7
Quantity	-	-	-	-
Schedule	-	-15.2	-	-15.2
Engineering	-	69.3	-	+69.3
Estimating	-	-10.5	-	-10.5
Other	-	-	-	-
Support	-	86.1	-	+86.1
Subtotal	-	+42.0	-	+42.0
Total Changes	-	+159.9	-	+159.9
Current Estimate	-	2318.3	-	2318.3

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	0.0	1843.0	0.0	1843.0
Previous Changes:				
Quantity	-	-16.6	-	-16.6
Schedule	-	+32.7	-	+32.7
Engineering	-	-	-	-
Estimating	-	-11.9	-	-11.9
Other	-	-	-	-
Support	-	+73.7	-	+73.7
Subtotal	-	+77.9	-	+77.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-3.7	-	-3.7
Engineering	-	60.3	-	+60.3
Estimating	-	-6.0	-	-6.0
Other	-	-	-	-
Support	-	69.5	-	+69.5
Subtotal	-	+120.1	-	+120.1
Total Changes	-	+198.0	-	+198.0
Current Estimate	-	2041.0	-	2041.0

b. (U) Previous Change Explanations --

Procurement

- Economic:** Revised escalation rates and procurement outlay factors.
- Quantity:** Total quantity procurement was reduced by one from seventy-three to seventy-two.
- Schedule:** The program was extended one year from 2000 to 2001.
- Estimating:** Rates are impacted by the new procurement quantity and schedule. Contractor overhead and labor rates have been revised due to new procurement outlay factors.
- Support:** Costs are impacted by extension of program one year from 2000 to 2001.

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation rates and procurement outlay factors. (Economic)	N/A	-87.7
Revised procurement schedule and accelerated procurement schedule. (Schedule)	-3.7	-15.2
Increase due to unanticipated safety ECPs and increased capability requirements beginning in FY 1997. (Engineering)	+60.3	+69.3
Revised pricing due to schedule change. (Estimating)	-6.0	-10.5
Increase in spares due to redefinition and refinement. Increase in support due to inefficiencies in ILS procurement structure. (Support)	+69.5	+86.1
Procurement Subtotal	+120.1	+42.0

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
29.567	-1.288	0.122	0.654	0.962	-0.351	--	2.533	2.632	32.199

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --	Initial Contract Price		
(U) <u>Airframe:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
McDonnell Douglas Corp., St. Louis, MO	\$102.6	\$0.0	4
N00019-93-C-0214, FFP			
Award: May 6, 1994			
Definitized: May 6, 1994			

AV-8B REMANUFACTURE, December 31, 1995

15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$197.3	\$0.0	8	\$197.3	\$197.3

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 37.5% (3 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 22.8% (\$528.3 / \$2318.3)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	-	-	-	-	-
Procurement	276.6	251.7	318.9	1471.1	2318.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	276.6	251.7	318.9	1471.1	2318.3

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AV-8B REMANUFACTURE, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy

1994	4	6.6	109.7	137.9	144.6	141.1	89.7	2.0
1995	4	3.0	97.4	124.2	132.0	125.6	18.7	1.9
1996	8	9.3	170.0	231.7	251.7	1.4	0.6	2.0
1997	10	20.4	200.4	287.2	318.9			2.2
1998	12	11.0	246.6	308.9	350.7			2.2
1999	16	0.9	314.7	428.6	497.4			2.3
2000	16	0.8	306.6	396.2	469.9			2.2
2001	2	0.8	68.7	126.3	153.1			2.2
Subtot	72	52.8	1514.1	2041.0	2318.3	268.1	109.0	
Grand Total	72	52.8	1514.1	2041.0	2318.3	268.1	109.0	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

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AV-8B REMANUFACTURE, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

There is no antecedent to the AV-8B.

Flight hours per aircraft per month 23.7
 Number of aircraft/squadron 20
 (14 aircraft per squadron with a six aircraft detachment)
 Consumption rate gal/hr 758.4
 POL cost, JP-5, per barrel, FY 92 29.8

Date of estimate: 20 October 1993

Source: AIR-4.2 FY92 Operating and Support Cost Update Report

b. (U) Costs -- (FY 1994 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per squadron/year	Avg Annual Cost Per squadron/year
Personnel	8.8	N/A
Consumables	14.9	N/A
Depot Maintenance	5.1	N/A
Sustaining Investment	2.7	N/A
Indirect Cost	0.6	N/A
Total	32.1	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
OM&M	20.5	9.0	10.5	---	40.0
APN-6	1.6	0.6	---	---	2.2
Total	22.1	9.6	10.5	---	42.2

AF-16 NAS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: NAS

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

National Airspace System (NAS)

2. DoD Component: USAF

Joint Participants:

Army, Navy

3. Responsible Office and Telephone Number:

ZSC/TGN

11 Eglin Street

Hanscom AFB

Bedford, MA 01731-2120

Lt Col David MacKensie

Assigned: April 15, 1994

AV 478-4947 COMM (617) 377-4947

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0204696N, 0305137F, 0604633A

PROCUREMENT:

APPN 3080 ICN 24696N (Navy)

APPN 2031 ICN 64633A (Army)

APPN 3080 ICN 35137F (Air Force)

MILCON:

PE 0305137F

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

SAF/PAS

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5. Related Programs:

Federal Aviation Administration (FAA) Capital Investment Plan (CIP) program.

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 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. Program Highlights:

a. Significant Historical Developments --

The significant events of 1993 included the demonstration of the Military Airspace Management System (MAMS) prototype software at Edwards AFB, CA, on the MAMS prototype; demonstration of a repackaged Federal Aviation Administration (FAA) Common Console into the DoD configuration; release of the MAMS Request for Proposal (RFP) and subsequent source selection; and formal approval of executive interagency agreements for test, procurement and support of FAA Automation Systems.

The significant events of 1994 included Chief of Staff of the Air Force (CSAF) approval of updated National Airspace System (NAS) and MAMS Operational Requirements Documents (ORDs); Air Force Acquisition Executive (AFAE) approval of Change 1 to the NAS Acquisition Program Baseline (APB); DAC approval of MAMS Milestone II review; award of the MAMS Engineering Management Development (EMD) contract to Computer Based Systems, Inc. (CBSI); OSD approval of the NAS Test and Evaluation Master Plan (TEMP); FAA release of the Enhanced Terminal Voice Switch (ETVS) RFP; program office evaluation of FAA's Standard Terminal Automation Replacement System (STARS) to meet DoD operational and schedule requirements; and FAA development of an ORD that would satisfy DoD's automation requirements.

In Aug 94, the DoD assumed from the FAA, the lead role for the Digital Airport Surveillance Radar (DASR) acquisition. The FAA will

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7a. Program Highlights (Cont'd):

be offered options on the DoD contract. Excellent progress continued in the development of a single integrated system to meet the needs of military and civil aviation.

The significant events of 1995 included the MAS paper AFSARC Milestone II review; the Military Airspace Management System (MAMS) contract termination with Computer Based Systems, Inc. (CBSI) because of continuous cost and schedule problems; the successful program office negotiations with SM-ALC to utilize their existing Advanced Technology Support Program (ATSP) contract for completion of the MAMS development effort; the Federal Aviation Administration (FAA) Enhanced Terminal Voice Switch (ETVS) contract award to Denro, Inc.; the FAA Standard Terminal Automation Replacement System (STARS) draft RFP release; and the Digital Airport Surveillance Radar (DASR) RFP release.

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.

b. Significant Developments Since Last Report --

The Military Airspace Management System (MAMS) delivery order was awarded to Hughes Aircraft on 3 Nov 95 utilizing the existing SM-ALC Advanced Technology Support Program (ATSP) contract to complete the MAMS development effort.

The Digital Airport Surveillance Radar (DASR) source selection commenced on 18 Dec 95.

Progress continued between the Federal Aviation Administration (FAA) and DoD personnel regarding unresolved DoD technical requirements on the FAA's Enhanced Terminal Voice Switch (ETVS) contract with Denro, Inc.

The MAS program is expected to satisfy all mission requirements.

c. Changes Since As Of Date --

The Federal Aviation Administration (FAA) RFP for the Standard Terminal Automation Replacement System (STARS) was released on 1 Mar 96. The STARS RFP reflects an NDI approach to the automation replacement system which will meet all DoD needs.

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8. Threshold Breaches:

There are no breaches to the AFAC approved APS dated 20 July 1995 and no Himm-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
DoD ATCALs in the NAS			
Milestone 0	NOV 90	NOV 90	NOV 90
Milestone I	JUL 92	JUL 92	JUL 92
Milestone II	JUL 95	JUL 95	JUL 95
Milestone III	JUN 98	JUN 98	JUN 98
IOC (First DoD Site Activation)	APR 00	APR 00	APR 00
RADAR (DASR)			
Contract Award	DEC 95	DEC 95	MAY 96 (Ch-1)
DT&E			
Start	AUG 96	AUG 96	AUG 96
Complete	JAN 98	JAN 98	JAN 98
LRIP Contract	MAR 98	MAR 98	MAR 98
LRIP First Delivery	JUN 99	JUN 99	JUN 99
IOT&E			
Start	JUN 97	JUN 97	JUN 97
Complete	MAR 98	MAR 98	MAR 98
Full Rate Production Contract Award	MAR 99	MAR 99	MAR 99
AUTOMATION (DAAS)			
Production Award Exercise	JUL 98	JUL 98	JUL 98
VOICE (VCSS)			
Program Review	MAY 97	MAY 97	MAY 97
NAMS			
Development Contract	JUL 95	JUL 95	NOV 95 (Ch-2)
DT&E			
Start	OCT 97	OCT 97	OCT 97
Complete	MAR 98	MAR 98	MAR 98
IOT&E			
Start	MAY 98	MAY 98	MAY 98
Complete	AUG 98	AUG 98	AUG 98
Milestone III Review	NOV 98	NOV 98	NOV 98
Full Rate Production Contract Award	NOV 98	NOV 98	NOV 98
IOC (First Delivery)	AUG 98	AUG 98	AUG 98

b. Previous Change Explanations --

The Milestone II Review was adjusted to incorporate DoD's impact of the Federal Aviation Administration (FAA) initiation of an NDI program for a new terminal automation system to which the DoD NAS baseline is synchronized.

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9b. Schedule (Cont'd):

Development Contract Award was approved for deletion by the AFAB in the 27 May 94 revised APB. There will be no development contracts awarded.

The MAMS EMD contract was awarded to Computer Based Systems, Inc. on 8 June 1994 versus the originally expected May 1994 award date. A greater number of proposals than anticipated resulted in a longer source selection.

The Milestone II date was adjusted to reflect the actual decision date.

The dates of the following events were adjusted to reflect the Current Estimate in accordance with the 20 July 95 MS II APB: NAS MS III; MAMS DT&E Start and Complete; IOT&E Start and Complete; and IOC.

The following milestones were not included in the MS II APB, have not been carried forward as part of the Development Estimate, were reflected in the September 1995 SAR for transitional purposes only, and will not be shown in the December 1995 SAR nor any future SARs: MAMS Development Contract Award, DT&E Start and Complete, IOT&E Start and Complete, Production Award/Exercise, First Delivery, POC, Development Contract Award (initial), Voice QOT&E Start and Complete, Radar QOT&E Start and Complete, and Production Award/Exercise (VCSS/DAAS).

The following events were added with the approval of the 20 July 95 MS II APB: Radar (DASR) Contract Award, DT&E Start and Complete, LRIP Contract, LRIP First Delivery, IOT&E Start and Complete, Full Rate Production Contract Award, Automation (DAAS) Production Award Exercise, Voice (VCSS) Program Review, MAMS Development Contract, Milestone III Review, and Full Rate Production Contract Award.

c. Current Change Explanations --

(Ch-1) The Radar (DASR) Contract Award date was changed from March 96 to May 96 to reflect the delay caused by the implementation of mandated RFP streamlining.

(Ch-2) The MAMS Development Contract date was changed from October 95 to November 95 to reflect the actual award date.

d. References --

Development Estimate:

AFAB Approved Acquisition Decision Memorandum dated July 24, 1995.

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9d. Schedule (Cont'd):

Approved Program:

AFAB Approved Acquisition Program Baseline dated July 20, 1995.

10. Performance Characteristics:

A. Performance --	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
DOD ATCALS IN THE NAS					
Inter/Intrafacility					
Data Transfer					
Auto Transfer of Position Track Data	IAN ICD	IAN ICD / IAN ICD		TBD	IAN ICD
Electronic Inter-facility Transfer of Flight Plans	IAN ICD	IAN ICD / IAN ICD		TBD	IAN ICD
Aircraft Tracked Medium (LCF)	900	900 / 250		TBD	900
Radar Subclutter Visibility (dB)	55	55 / 42		TBD	43
Voice Compatibility/ Interoperability	Digital Voice Systems	Digital Voice Systems / Inter-face to existing FAA Systems		TBD	Digital Voice Systems
NAMS					
Conflict Identification	100% of con-flicts identi-fied; 85% of con-flicts identi-fied <or= 10 (sec)	100% of con-flicts identi-fied; 85% of con-flicts identi-fied <or= 10 (sec)		TBD	100% of con-flicts identi-fied; 85% of con-flicts identi-fied <or= 10 (sec)

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Interface with FAA	Transmittal Time for 85% of messages between Scheduler and FAA <or> 5 (min)	Transmittal Time for 85% of messages between Scheduler and FAA <or> 5 (min)	/ Transmittal Time for 85% of messages between Scheduler and FAA <or> 10 (min)	TBD	Transmittal Time for 85% of messages between scheduler and FAA <or> 5 (min)
Reporting	Processing Time of Utilization Data Requests <or> 1 (min); Total Manual and Automatic Report Generation <or> 10 (min)	Processing Time of Utilization Data Requests <or> 1 (min); Total Manual and Automatic Report Generation <or> 10 (min)	/ Processing Time of Utilization Data Requests <or> 10 (min); Total Manual and Automatic Report Generation <or> 30 (min)	TBD	Processing Time of Utilization Data Requests <or> 1 (min); Total Manual and Automatic Report Generation <or> 10 (min)

ICD - Interface Control Document

b. Previous Change Explanations --

Current estimate of stub items changed to reflect approval of the revised NAS and MANS OEDs on 3 March 1994 and 11 March 1994 respectively. The new OEDs portrayed a requested reduction in key parameters and quantified remaining parameters as required.

Current estimate of Radar Subclutter Visibility was reduced from 55 dB to 43 dB to reflect the results of a DoD market survey. This survey evaluated the current capability of industry to meet this parameter at 43 dB. The program is not impacted since 43 dB falls

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10b. Performance Characteristics (Cont'd):
within the threshold range for this stub item.

The following items are not critical performance parameters, were therefore not included in the MS II APB, were shown in the September 95 SAR for transitional purposes only, are not reported in the December 95 SAR nor any future SARs: Automation Data/Voice Recording, Automation Radar Presentation, Automation Compatibility Data Processing, Radar Compatibility, Voice Switch Lighting Environments, Voice System Interface Capability, and Voice Recording.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
AFAR Approved Acquisition Decision Memorandum dated July 24, 1995.

Approved Program:
AFAR Approved Acquisition Program Baseline dated July 20, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	96.6	96.6	102.2
Procurement	473.7	473.7	494.9
Flyaway	(302.8)		(315.1)
Other Wpn Systems Cost	(144.7)		(150.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(26.2)		(29.8)
Construction (MILCON)	3.0	3.0	3.7
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 90 Base-Year \$	573.3	573.3	600.8
Escalation	217.8	217.8	191.4
Development (RDT&E)	(16.4)	(16.4)	(15.4)
Procurement	(200.0)	(200.0)	(174.9)
Construction (MILCON)	(1.4)	(1.4)	(1.1)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	791.1	791.1	792.2
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	53	53	53
Total	53	53	53

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11b. Total Program Cost and Quantity (Cont'd):

The unit of measure of this program represents National Airspace System (NAS) operational sites.

An LRIP quantity has not been approved yet.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AFAB Approved Acquisition Decision Memorandum dated July 24, 1995.

Approved Program:

AFAB Approved Acquisition Program Baseline dated July 20, 1995.

12. Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	DCR Baseline (JUL 95 APB)	Percent Change
a. Total Program			
(1) Cost (BY90\$)	600.8	573.3	
(2) Quantity	53	53	
(3) Unit Cost	11.336	10.817	4.80
b. Procurement			
(1) Cost (BY90\$)	494.9	473.7	
(2) Quantity	53	53	
(3) Unit Cost	9.338	8.938	4.48

Please note that because of significant variations of the many complex and varied configurations at each NAS site, Average Unit Procurement Cost (AUPC) information does not provide a useful measure of merit. AUPC provides only notional data. SAF/AQ is in agreement per their letter dated 17 Feb 93.

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	113.0	673.7	4.4	791.1
Previous Changes:				
Economic	-3.9	-	-	-3.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+10.8	-	+0.4	+11.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+6.9	-	+0.4	+7.3
Current Changes:				
Economic	-2.1	-43.9	-0.3	-46.3
Quantity	-	-	-	-
Schedule	-	19.8	-	+19.8
Engineering	-	-	-	-
Estimating	-0.2	8.9	0.3	+9.0
Other	-	-	-	-
Support	-	11.3	-	+11.3
Subtotal	-2.3	-3.9	-	-6.2
Total Changes	+4.6	-3.9	+0.4	+1.1
Current Estimate	117.6	669.8	4.8	792.2

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	96.6	473.7	3.0	573.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+5.8	-5.5	+0.5	+0.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+5.8	-5.5	+0.5	+0.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	12.4	-	+12.4
Engineering	-	-	-	-
Estimating	-0.2	5.4	0.2	+5.4
Other	-	-	-	-
Support	-	8.9	-	+8.9
Subtotal	-0.2	+26.7	+0.2	+26.7
Total Changes	+5.6	+21.2	+0.7	+27.5
Current Estimate	102.2	494.9	3.7	600.8

b. Previous Change Explanations --

RD&E

Economic: Revised escalation rates.

Estimating: Adjustments were made for current and prior year inflation, refinement of the estimate, as well as for Small Business Innovative Research (SBIR) reductions, a Congressional general reduction, FFRDC, and Non-FFRDC actions and fact-of-life changes.

Procurement

Estimating: Base year dollar reduction resulting from correction of inflation indices used in program cost estimate.

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13b. Cost Variance Analysis (Cont'd):

MILCON

Estimating: Revised estimate to appropriately reflect MILCON efforts within the 3300 line.

c. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-2.1
Adjustment for Current and Prior Inflation. (Estimating)	+0.7	+0.9
Funding reductions from reprogramming actions involving SBIRs, FFRDC, & non-FFRDC actions, and Bosnia effort. (Estimating)	-0.9	-1.1
RDT&E Subtotal	-0.2	-2.3
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-44.1
Economic adjustment for negative program change. (Economic)	N/A	+0.2
Revised estimate to reflect stretchout in the schedule of site activation dates with the movement of one site from FY01 to FY05. (Schedule)	+12.4	+19.6
Reclassification of Military Airspace Management System (MAMS) costs from Other Weapon Systems Costs to Flyaway. (Support)	-5.4	-8.9
Reclassification of MAMS costs from Other Weapon System Costs to Flyaway. (Estimating)	+5.4	+8.9
Revised estimate of Initial Spares due to rephasing of site activation dates. (Support)	+3.6	+4.9
Revised estimate of Other Weapon Systems Costs due to rephasing of site activation dates. (Support)	+10.7	+15.3
Procurement Subtotal	+26.7	-3.9
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-0.3

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	Base-Year	Then-Year
Revised estimate due to changes in inflation assumptions. (Estimating)	+0.2	+0.3
MILCON Subtotal	+0.2	--

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
14.926	-0.947	--	0.374	--	0.381	--	0.213	0.021	14.947

15. Contract Information:

The NAS program currently has no large active contracts. The Digital Airport Surveillance Radar (DASR) contract is expected to be awarded 3rd quarter FY96.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 41.2% (7 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 11.1% (\$88.1 / \$792.2)

HAS, December 31, 1995

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY90-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2006)	Total
MDT&E	75.5	12.6	12.6	16.9	117.6
Procurement	-	-	2.4	667.4	669.8
MILCON	-	-	-	4.8	4.8
O&M	-	-	-	-	-
Total	75.5	12.6	15.0	689.1	792.2

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1990				2.9	3.0	3.0	3.0	4.3
Subtot				2.9	3.0	3.0	3.0	

Appropriation: 2031 Aircraft Procurement, Army

1997				1.9	2.4			2.2
1998	3		3.4	7.1	9.0			2.3
1999	1		4.8	8.2	10.7			2.2
2000			8.3	12.6	16.7			2.2
2001	3		15.5	16.8	22.8			2.2

HAS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

2002	5		7.1	7.7	10.6			2.2
2003				3.9	5.5			2.2
Subtot	12		39.1	58.2	77.7			
Army	12		39.1	61.1	80.7	3.0	3.0	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				3.9	4.0	4.0	4.0	4.3
Subtot				3.9	4.0	4.0	4.0	

Appropriation: 1810 Other Procurement, Navy

1998	3		5.4	10.4	13.2			2.3
1999	6		20.0	30.8	40.0			2.2
2000	3		18.7	29.6	39.3			2.2
2001	4		21.8	29.5	40.0			2.2
2002	1		15.7	32.9	45.6			2.2
2003			25.4	42.1	59.6			2.2
Subtot	17		107.0	175.3	237.7			
Navy	17		107.0	179.2	241.7	4.0	4.0	

HAS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (\$)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1990				3.9	4.0	4.0	4.0	4.0
1991				9.3	9.9	9.9	9.9	4.3
1992				3.8	4.2	4.2	4.2	2.8
1993				6.0	6.7	6.7	6.7	2.7
1994				12.4	14.2	14.2	12.3	2.0
1995				25.4	29.5	15.7	9.7	1.9
1996				10.6	12.6	8.3	0.7	2.0
1997				10.4	12.6			2.2
1998				10.9	13.5			2.2
1999				1.8	2.3			2.3
2000				0.5	0.6			2.2
2001				0.4	0.5			2.2
Subtot				95.4	110.6	63.0	47.5	

Appropriation: 3080 Other Procurement, Air Force

1998	3		13.7	19.1	24.2			2.3
1999	6		30.9	48.0	62.3			2.2
2000	3		27.0	43.9	58.2			2.2

NAS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Boursc	Rac		Program	Obliga- ted	Ex- pended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

2001	3		30.9	48.2	65.3			2.2
2002	3		31.3	48.0	66.5			2.2
2003	3		18.0	28.4	40.2			2.2
2004	2		9.5	15.4	22.3			2.2
2005	1		7.7	9.5	14.0			2.2
2006				0.9	1.4			2.2
Subtot	24		169.0	261.4	354.4			

Appropriation: 3300 Military Construction, Air Force

1998				2.5	3.2			2.3
1999								2.2
2000								2.2
2001				1.2	1.6			2.2
Subtot				3.7	4.8			
UBAF	24		169.0	360.5	469.8	63.0	47.5	
Grand Total	53		315.1	600.8	792.2	70.0	54.5	

Expenditures and Obligations reflect program office records as of February 29, 1996.

HAS, December 31, 1995

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

Design-to-Cost information is not appropriate for this effort because HAS is a non-developmental (NDI) program. Design-to-Cost was approved by the Milestone Decision Authority (MDA) as "Not Applicable" at both MS I and MS II.

18. Operating and Support Costs:

- a. Assumptions and Ground Rules --

The Operating and Support (O&S) cost estimate is based on analysis performed in preparation for the July 1995 MS II decision. The estimate assumes a 20 year life from year FY00 to FY19.

- b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per HAS Site	N/A
Operations Personnel	1.1	N/A
Maintenance Personnel	0.3	N/A
Unit Level Consumables	0.6	N/A
Sustaining Support	0.1	N/A
Indirect Support	0.4	N/A
Total	2.5	N/A

NAS, December 31, 1995

18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Air Force	---	---	---	315.8	315.8
Navy	---	---	---	151.0	151.0
Army	---	---	---	118.6	118.6
Total	---	---	---	585.4	585.4

SELECTED ACQUISITION REPORT (RCS;DD-COMP (O&A) 823)

PROGRAM: LONGBOW HELLFIRE

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
LONGBOW HELLFIRE - subsystem of the AH-64 APACHE Weapon System

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
ACTING PROJECT MANAGER Ms. VICKY R. ARMBRUSTER
AIR-TO-GROUND MISSILE SYSTEMS Assigned: July 7, 1995
ATTN: SFAE-MSL-HD AV 746-1365 COMM (205) 876-1117
RSA, AL 35898-5610

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 64816 Project DC13, DC27 (Shared), DC31 (Shared)
PE 23802 Project D045 (Shared)
PROCUREMENT:
APFN 2032 ICN C70300 (Army)

MAR 29 1996

IS AMENDED

~~Excluded from automatic downgrading and declassification, 48 CFR 1.101-11.4~~
~~Excluded from automatic downgrading and declassification, 48 CFR 1.101-11.4~~

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96-C-0154

Longbow HELLFIRE, December 31, 1995

5. (U) Related Programs:

AH-64 Longbow Apache Helicopter; Laser HELLFIRE

6. (U) Mission and Description:

HELLFIRE is an air-to-ground missile system designed to defeat individual hardpoint targets and minimize exposure of the delivery vehicle to enemy fire. The missile configuration has the capability for modular guidance section replacements. A version of the missile utilizing laser guidance, laser HELLFIRE, is presently in production and is a separate program. Longbow HELLFIRE (a version utilizing a radio frequency guidance section) is in low-rate initial production. Longbow HELLFIRE and Laser HELLFIRE are complementary and neither missile replaces another missile system in the air-to-ground role.

Longbow HELLFIRE and Laser HELLFIRE will be employed on the AH-64D Longbow Apache helicopter. Longbow HELLFIRE will provide the capability to conduct battle both day and night in adverse weather and with battlefield obscurants present. Longbow also offers a fire and forget capability which complements the semi-active laser HELLFIRE missile. The Longbow HELLFIRE Missile contains a radio frequency guidance section which will provide a lock-on before launch (LOBL) or lock-on after launch (LOAL) capability, depending on target range and movement parameters. Longbow will not change the AH-64 mission or role, but will provide for increased mission effectiveness by enhancing lethality and survivability. It is envisioned that Longbow HELLFIRE will also be used on the Comanche.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In 1981, the U.S. Army Aviation Applied Technology Directorate, Fort Eustis, Virginia, conducted competition and awarded parallel competitive technology demonstration contracts to Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) for a fire control radar to be integrated and tested on the AH-64 Apache. In late 1981, after a series of study efforts, a classified program was initiated for a millimeter wave radar seeker for the HELLFIRE Modular Missile System which, in conjunction with the fire control radar, yielded a total systems approach for Apache. In 1982, WEC and MMC were again awarded parallel competitive contracts for the first phase of this program named the Critical Technology Demonstration (CTD). During the three-plus years of the CTD program, both MMC and WEC demonstrated that the technology was in hand for further systems development. As a result of a Government In-Process Review in Aug 85, a contract was awarded in Nov 85 to MMC and WEC, as a joint venture (JV), for preliminary design of the tactical Longbow System. This was followed in Aug 86 by the award of a Proof of Principle demonstration contract to the JV. An Initial Design Phase contract was awarded to the JV in Sep 89. Proof of principal of the Longbow missile was accomplished 11 Apr 90. The

Longbow HELLFIRE, December 31, 1995

7a. (U) Program Highlights (Cont'd):

Defense Acquisition Board (DAB) granted approval for engineering and manufacturing development (EMD) of the Longbow Missile 5 Dec 90, and a letter contract for EMD of the Longbow missile was awarded 26 Dec 90. The letter contract was definitized 7 May 91. A Special Program Review (SPR) to assess the Longbow HELLFIRE Program and define funding strategies to support Longbow Apache, fire control radar and missile programs was held in Aug 92. To better align the Longbow HELLFIRE program with the Longbow Apache program, initiation of production was delayed by one year and the procurement program was stretched. The Conventional Systems Committee review for Longbow long lead items and initial production facilitization was held 5 Oct 94. Approval to proceed with long lead of the HELLFIRE missile was withheld until cost reduction efforts were evaluated and approved. The Longbow HELLFIRE Cost Reduction Plan was briefed to the Defense Acquisition Executive on 1 Dec 94. The plan was approved and funding was released for long lead procurement and execution of the cost reduction plan. The contract for long lead procurement was awarded 23 Dec 94 by definitization of option one under the engineering and manufacturing development contract.

b. (U) Significant Developments Since Last Report --

On 11 May 95, the final development flight test of the Longbow HELLFIRE Missile was conducted. This flight successfully met a cost effective combination of system qualification and live fire test objectives. This firing successfully concluded the development flight test program. Live fire tests were successfully completed 27 Jul 95. On 13 Oct 95 the Defense Acquisition Executive granted approval for Longbow HELLFIRE to enter low-rate initial production and delegated authority to the Army to make the full-rate production decision. On 14 Dec 95 a novation agreement was signed that changed the Longbow JV to the Longbow Limited Liability Company (LLC), which was established by Lockheed Martin Corporation and Westhouse Electric Corporation (Westinghouse underwent a name change effective 4 Mar 96, now known as Northrop Grumman Corporation), to produce Longbow HELLFIRE. The Longbow HELLFIRE LRIP 1 option was definitized within available CRA funding 14 Dec 95. The remaining portion of this option was exercised 31 Jan 96.

The Longbow HELLFIRE Missile System is expected to satisfy the mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 27 Nov 95. There are no Nunn-McCurdy unit cost breaches.

Longbow HELLFIRE, December 31, 1995

9. (U) Schedule:

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program:PDF</u>	Current <u>Estimate</u>
Milestone I In-Process Review	AUG 85	AUG 85	AUG 85
Milestone IB ASARC	JUL 89	JUL 89	JUL 89
Milestone II DAB	DEC 90	DEC 90	DEC 90
FSD Contract Award	DEC 90	DEC 90	DEC 90
Component Qual Test			
Start	MAY 93	AUG 93	AUG 93
Complete	SEP 93	MAY 95	MAY 95 (Ch-1)
System Qual Test			
Start	MAR 94	JUL 94	JUL 94
Complete	NOV 94	MAY 95	MAY 95 (Ch-1)
Milestone IIIA (DAB)	MAR 95	N/A	OCT 95
Milestone III (DAB)	N/A	OCT 95	OCT 95 (Ch-2)
Low-Rate Initial Production Contract Award	APR 95	DEC 95	DEC 95
First Production Delivery	SEP 96	MAR 97	MAR 97
Full-Rate Production Contract Award	DEC 96	DEC 97	DEC 97
Authorization FY 99 Multiyear Contract	N/A	JAN 97	JAN 97 (Ch-3)
First Unit Equipped (FUE)	FEB 97	OCT 97	OCT 97
IOC	APR 97	N/A	DEC 97 (Ch-4)

b. (U) Previous Change Explanations --

Low-Rate Initial Production (LRIP) Contract Award was changed from Apr 95 to Mar 95, First Production Delivery was changed from Sep 96 to Jun 96, and Full-Rate Production Contract Award was changed from Dec 96 to Nov 96 as a result of definitization of the LRIP options. In order to better align the Longbow HELLFIRE Program with the Longbow Apache program, a SPR directed the following program changes: Component Qual Test, Start changed from May 93 to Aug 93; Component Qual Test, Complete changed from Sep 93 to Nov 93; System Qual Test, Start changed from Mar 94 to Jul 94; System Qual Test, Complete changed from Nov 94 to Dec 94; Milestone IIIA (DAB) changed from Mar 95 to Nov 95; Low-Rate Initial Production Contract Award changed from Mar 95 to Dec 95; First Production Delivery changed from Jun 96 to Mar 97; Full-Rate Production Contract Award changed from Nov 96 to Dec 97; First Unit Equipped (FUE) changed from Feb 97 to Oct 97 and IOC changed from Apr 97 to Jan 98. Completion of component qualification test was extended from Nov 93 to Dec 94 in order to qualify the producibility enhanced transceiver design. Also a management decision was made to reschedule qualification tests of the environmental cover and container to the Jul-Dec 94 timeframe. Due to nonavailability of hardware, completion of component qualification of the producibility enhanced design was changed from Dec 94 to Apr 95. This also delayed

Longbow Hellfire, December 31, 1995

9b. (U) Schedule (Cont'd):

completion of system qualification from Dec 94 to Apr 95.

c. (U) Current Change Explanations --

(Ch-1) Component Qualification Complete and System Qualification Complete was changed from Apr 95 to May 95 to reflect date of actual accomplishment.

(Ch-2) Milestone IIIA(DAB) was replaced by Milestone III. The current estimate was changed from Nov 95 to Oct 95 to reflect date of actual accomplishment.

(Ch-3) Since the Longbow HELLFIRE Cost Reduction Plan is contingent upon a multiyear contract beginning in FY 99 the milestone for Authorization FY 99 Multiyear Contract was added.

(Ch-4) Milestone First Unit Equipped (FUE) was deleted from the APB since this applies to the Longbow Apache (AH-64D). The current estimate was changed from Jan 98 to Dec 97 to reflect the Longbow Apache date.

d. (U) References --

(U) Development Estimate:

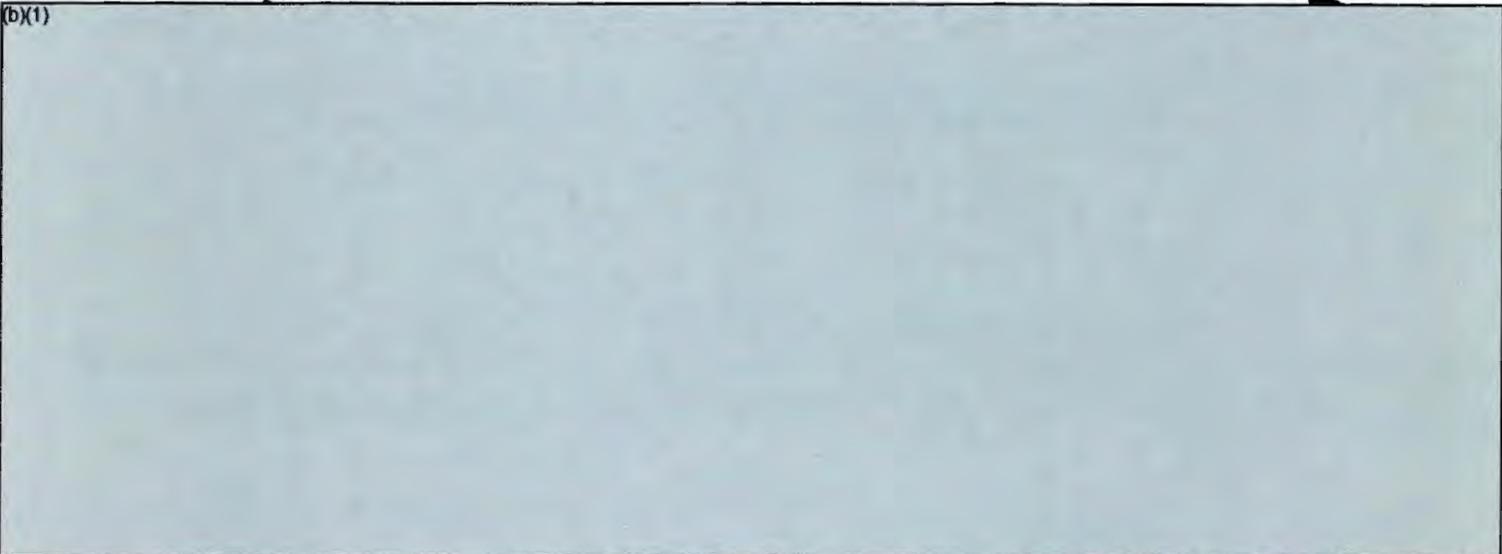
DAE Approved Acquisition Program Baseline dated 08 March 1991.

(U) Approved Program;PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>DE</u>	<u>Approved Program;PdE</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
		<u>Objective/Threshold</u>				
Independent Function	N/A	Yes	/ Yes	Yes	Yes	(Ch-1)



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10a. (U) Performance Characteristics (Cont'd):

Demonstrated data source (for all but the one below) is the 42 missile radar aided guided development test firing program.

*Demonstrated data source is the development test firing program targets. Analysis against FST-2 and FST-3 targets pending.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) Milestone Independent Function After Launch was added as a result of the Milestone III review.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program;PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

a. (U) Cost --	Development <u>Estimate</u>	Approved <u>Program;PdE</u>	Current <u>Estimate</u>
Development (RDT&E)	346.3	411.0	462.1
Procurement	1534.7	1941.0	1930.6
Flyaway	(1510.7)		(1919.2)
Other Wpn Sys Cost	(4.5)		(5.8)
Peculiar Support	(19.5)		(5.6)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	1881.0	2352.0	2392.7
 Escalation	 309.3	 283.6	 214.2
Development (RDT&E)	(-14.7)	(-24.4)	(-13.2)
Procurement	(324.0)	(308.0)	(227.4)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2190.3	2635.6	2606.9

The Development Estimate costs were divided by .87242 to convert them from Base Year 1991 dollars to Base Year 1996 dollars. The same factor was used for both appropriations.

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11b. (U) Total Program Cost and Quantity (Cont'd):

	Development <u>Estimate</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>10896</u>	<u>13311</u>	<u>13260</u>
Total	10896	13311	13260

Note: Excludes 70 RDTE prototypes from the SAR Baseline and 70 from the Current Estimate that are not considered fully configured.

- (1) Unit of measure is one missile.
- (2) LRIP quantities were established at the Milestone II DAB in Dec 90. In order to align the missile deliveries with the aircraft fielding schedule, during a Special Program Review held in Aug 92, the LRIP quantities were increased to 83 missiles over the 10% limit. From the Dec 93 SAR to the Dec 94 SAR the LRIP I quantity changed from 364 to 352 and the LRIP II quantity changed from 1050 to 1056. From the Dec 94 SAR the LRIP II quantity has changed from 1056 to 1005.

- c. (U) Foreign Military Sales/International Cooperative Programs -- None.
- d. (U) Nuclear Costs -- None.
- e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:PdE:
DAE Approved Acquisition Program Baseline dated November 27, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (NOV 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY96\$)	2392.7	2352.0	
(2) Quantity	13260	13311	
(3) Unit Cost	0.180	0.177	2.12

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LONGBOW HELLFIRE, December 31, 1995

12. (U) Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. (U) Procurement			
(1) Cost (BY96\$)	1930.6	1941.0	
(2) Quantity	13260	13311	
(3) Unit Cost	0.146	0.146	-0.15

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LONGBOW HELLFIRE, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	331.6	1858.7	0.0	2190.3
Previous Changes:				
Economic	-7.4	-17.7	-	-25.1
Quantity	-	+413.7	-	+413.7
Schedule	-	-125.3	-	-125.3
Engineering	-	-244.7	-	-244.7
Estimating	+59.8	+381.0	-	+440.8
Other	-	-	-	-
Support	-	-16.7	-	-16.7
Subtotal	+52.4	+390.3	-	+442.7
Current Changes:				
Economic	5.5	-82.0	-	-76.5
Quantity	-	-5.5	-	-5.5
Schedule	-	1.0	-	+1.0
Engineering	62.7	-	-	+62.7
Estimating	-3.3	-4.7	-	-8.0
Other	-	-	-	-
Support	-	0.2	-	+0.2
Subtotal	+54.9	-91.0	-	-26.1
Total Changes	+117.3	+299.3	-	+416.6
Current Estimate	448.9	2158.0	-	2606.9

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	346.3	1534.7	0.0	1881.0
Previous Changes:				
Quantity	-	+328.0	-	+328.0
Schedule	-	-	-	-
Engineering	-	-201.1	-	-201.1
Estimating	+62.2	+287.8	-	+350.0
Other	-	-	-	-
Support	-	-12.9	-	-12.9
Subtotal	+62.2	+401.8	-	+464.0
Current Changes:				
Quantity	-	-4.5	-	-4.5
Schedule	-	-	-	-
Engineering	57.3	-	-	+57.3
Estimating	-3.7	-1.7	-	-5.4
Other	-	-	-	-
Support	-	0.3	-	+0.3
Subtotal	+53.6	-5.9	-	+47.7
Total Changes	+115.8	+395.9	-	+511.7
Current Estimate	462.1	1930.6	-	2392.7

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: Reduction in hardware requirements for qualification. Under estimated complexity of transceiver. Adjustment for current and prior inflation. Revision of OGA and in-house costs. Adjusted FY 94 and FY 95 appropriated amounts to reflect reprogramming and actual funds received.

Procurement

Economic: Revised escalation indices. Adjustment for negative program change.

Quantity: Addition of 2415 missiles.

LONGBOW HELLFIRE, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

Schedule: Shift of FY 2005 and FY 2006 missiles to FY 1998. Compressed schedule from FY 2005 to FY 2003, and increased rate from 1500 to 2200 per year.

Engineering: Producibility redesign for transceiver, radome, gimbal assembly, exciter, inertial measurement system, and IF receiver.

Estimating: Change in estimating methodology, includes not-to-exceed price options for all-up-rounds. Estimating methodology changed to reflect peak production rate of 125/month. Changed methodology to reflect production rate increases to minimum sustaining in full rate production. Methodology changed to reflect peak production rate of 183/month, and 5 year multi-year procurement beginning in FY 99.

Support: Increased data cost for program stretch. Cost for 2415 deicing domes. Revised support requirements based on shift of procurement buy and reduced data cost.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices (Economic)		+5.5
Preplanned product improvement for Home On Jam and Counter Active Protection System capabilities. (Engineering)	+57.3	+62.7
Adjustment for current and prior inflation (Estimating)	-5.8	-5.5
Revised estimate to adjust FY94/FY95 to actuals. (Estimating)	+2.1	+2.2
RDT&E Subtotal	<u>+53.6</u>	<u>+64.9</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-83.8
Economic adjustment for negative program change. (Economic)	N/A	+1.8
Adjustment for current and prior inflation. (Estimating)	+2.6	+2.9
Total variance associated with decrease of 51 units from 13311 to 13260.	+9.8	+11.8
Decrease of 51 units. (Quantity)	-4.5	-5.5

Longbow HELLFIRE, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in FY97 procurement buy. (Schedule)	--	+1.0
Allocation to Estimating variance associated with quantity decrease. (Estimating)	-4.3	-7.6
Revised support cost estimates due to changes in methodology. (Support)	+0.3	+0.2
 Procurement Subtotal	<u>-5.9</u>	<u>-91.0</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.201	-0.008	-0.005	-0.009	-0.014	0.033	--	-0.001	-0.004	0.197

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --	Initial Contract Price		
(U) <u>Longbow HELLFIRE:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Longbow LLC, Orlando, FL			
DAAH01-91-C-0057, FFP	\$183.1	N/A	352
Award: December 23, 1994			
Definitized: December 23, 1994			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$183.1	N/A	352	\$183.1	\$183.1

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

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Longbow Hellfire, December 31, 1995

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 40.0% (6 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 23.6% (\$616.1 / \$2606.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY91-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	386.2	-	-	62.7	448.9
Procurement	41.2	188.7	249.5	1678.6	2158.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	427.4	188.7	249.5	1741.3	2606.9

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1991			66.9	66.9	61.2	61.2	61.0	4.3
1992			107.6	107.6	100.8	100.8	100.7	3.0
1993			85.7	85.7	82.2	82.1	82.1	2.4
1994			108.7	108.7	106.2	106.2	105.7	2.0
1995			35.9	35.9	35.8	35.5	33.7	1.9
1996								2.0

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Longbow Hellfire, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997								2.2
1998			14.9	14.9	15.9			2.2
1999			18.6	18.6	20.2			2.3
2000			15.4	15.4	17.1			2.2
2001			8.4	8.4	9.5			2.2
Subtot			462.1	462.1	448.9	385.8	383.2	

Expenditures and obligations reflect program office records as of 16 Feb 95.

Appropriation: 2032 Missile Procurement, Army

1995		25.1		40.4	41.2	40.0	11.2	1.9
1996	352	27.4	169.2	182.5	188.7	163.8	6.6	2.0
1997	1005	19.7	214.6	235.7	249.5			2.2
1998	1506	7.3	239.2	248.0	268.4			2.2
1999	2000		302.5	304.2	336.5			2.3
2000	2200		255.6	257.2	290.8			2.2
2001	2200		249.7	251.3	290.4			2.2
2002	2200		206.7	208.0	245.6			2.2

LONGBOW HELLFIRE, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2003	1797	7.5	194.7	164.0	197.9			2.2
2004				21.2	26.2			2.2
2005				18.1	22.8			2.2
Subtot	13260	87.0	1832.2	1930.6	2158.0	203.8	17.8	
Grand Total	13260	87.0	2294.3	2392.7	2606.9	589.6	401.0	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	70/70
Procurement	0/0

b. (U) Approved Design-to-Cost Objective -- N/A.

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

LONGBOW HELLFIRE, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):
cost to repair.

- o Transportation costs associated with annual overhaul.
- o System Project Management
- o Surveillance Program.

There is no antecedent system.

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Missile	Avg Annual Cost Per Antecedent
Fielding	0.0	N/A
Sustainment	0.1	N/A
Total	0.1	N/A

Operating and support costs are from the 30 Jun 95 Program Office Estimate. Estimated average annual cost per missile for sustainment is \$6,563. Sustainment costs are defined in Section 18a.

c. (U) Contractor Support Costs -- None.

LPD 17 Class, December 31, 1995

5. (U) Related Programs (Cont'd):

Helicopters, MV 22 Assault Aircraft, Cooperative Engagement Capability (CEC), Evolved Seasparrow Surface Missile System (ESSM), Vertical Launch System (VLS).

6. (U) Mission and Description:

The LPD 17 Class Amphibious Transport Dock Ship will be the functional replacement for the LPD 4, LSD 36, LKA 113, and LST 1179 Classes of Amphibious Ships in embarking, transporting and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct the primary amphibious warfare mission. The LPD 17 Class is required to fill the projected lift shortfall created by the retirement of the above ships.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Joint Requirements Oversight Council (JROC) validated the LPD 17 Class Mission Need Statement (MNS) on 18 September 1990. The planned retirement of 41 ships of the LKA 113, LPD 4, LSD 36, and LST 1179 Classes of Amphibious ships will result in a significant shortfall in amphibious lift and flexibility. LPD 17 Class will be the functional replacement for these ships. Planned deliveries of the LSD 41, LST 41 (Cargo Variant), and LHD ships will not fully compensate for this projected shortfall. The LPD 17 Class ships are required to fill the projected shortfall and to balance amphibious assault lift elements. Milestone 0 DAB was held on 1 November 1990 and feasibility studies initiated in February 1991. The JROC issued a memorandum, JROCH-026-91 dated 28 June 1991, stating that JCS had reviewed the required military capabilities and determined that a requirement for amphibious assault lift existed. In addition, the Defense Planning Guidance, dated 22 May 1992, directed the Navy to maintain a crisis response forward presence in various areas of the world, with amphibious forces. Thirteen alternatives were examined during this phase. The Milestone 1 DAB was held on 11 January 1993 and on 19 January 1993, the Under Secretary of Defense for Acquisition, (USD(A)), signed the Acquisition Decision Memorandum (ADM) approving the Navy recommended ship alternative and authorizing the program to enter Phase I, Preliminary/Contract Design. The baseline ship includes the cooperative engagement capability and sufficient own-ship self-defense capability against sea-skimming anti-ship cruise missiles addressed by the FY94 and FY95 Appropriation Act reports. The award of the lead ship was revised from FY96 to FY98 in the FY 1996 President's Budget plan.

b. (U) Significant Developments Since Last Report --

The JROC validated the LPD 17 Key Performance Parameters in May 1995. The FY 1996 Defense Appropriation Act restored lead ship funding to

LPD 17 Class, December 31, 1995

7b. (U) Program Highlights (Cont'd):

FY 1996. The Milestone II Cost and Operational Effectiveness Analysis was completed in December 1995. Integrated Product Teams were formed with Navy and Office of the Secretary of Defense representatives to prepare for a Milestone II Defense Acquisition Board review to support award of the contract for detail design, total ship systems integration, construction, testing, logistics and life cycle support planning of the lead ship in FY 1996.

The LPD 17 Class Program is a pre-Milestone II Program and the Selected Acquisition Report is limited to RDT&E in accordance with Title 10, USC, Section 2432.

The LPD 17 Class Program is expected to satisfy its mission requirements.

c. (U) Changes Since As Of Date -- None

8. (U) Threshold Breaches:

The APB for LPD 17 Class Program has not been approved. A revised APB will be submitted in support of the upcoming Milestone II review. Munn-McCurdy Unit Cost Reporting is not applicable for RDT&E only SARs.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I	JAN 93	N/A	JAN 93
DT&E (DT-I)			
Start	MAR 93	N/A	MAR 93
Complete	MAR 95	N/A	MAR 95
Program Status Review	MAR 94	N/A	TBD
OT&E (OT-I)			
Start	MAY 94	N/A	NOV 94
Complete	NOV 94	N/A	JAN 95
Milestone II	JUL 95	N/A	JUN 96(Ch-1)
Lead Ship Award	MAR 96	N/A	JUN 96(Ch-1)
DT&E (DT-IIA)			
Start	APR 96	N/A	JUL 96(Ch-1)
Complete	DEC 97	N/A	DEC 97(Ch-1)
OT&E (OT-II)			
Start	APR 96	N/A	JUL 96(Ch-1)
Complete	DEC 97	N/A	DEC 97(Ch-1)
Program Review	JAN 98	N/A	JAN 98(Ch-1)
DT&E (DT-IIB)			

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --

	Planning Estimate	Approved Program	Current Estimate
Start	FEB 98	N/A	MAR 98(Ch-1)
Complete	JAN 02	N/A	APR 02(Ch-1)
Lead Ship Delivery	JAN 02	N/A	APR 02(Ch-1)
OT&E (OT-11C)			
Start	FEB 02	N/A	MAY 02(Ch-1)
Complete	MAY 03	N/A	AUG 03(Ch-1)
OT&E (OT-11IA)			
Start	MAR 03	N/A	JUN 03(Ch-1)
Complete	APR 03	N/A	JUL 03(Ch-1)
Milestone III	OCT 03	N/A	JAN 04(Ch-1)
(b)(1)			
OT&E (OT-1B)			
Start	N/A	N/A	JAN 96(Ch-2)
Complete	N/A	N/A	FEB 96(Ch-2)

Program Review of Jan 98 (Current Estimate) is prior to Follow Ship Award.

b. (U) Previous Change Explanations --

The Program Status Review, previously estimated for Jun 94, was deferred pending JROC revalidation of the ship's mission.

The Current Estimate of the OT&E (OT-1) Start and Completion was revised to reflect CONOPTEVFOR scheduling of the Early Operational Assessment (EOA).

All other Current Estimate Milestone dates were revised to reflect the change in lead ship award from FY96 to FY98 in the FY 1996 President's Budget plan.

c. (U) Current Change Explanations --

(Ch-1):

All Current Estimate Milestone dates starting with Milestone II have been revised to reflect the change in lead ship award from FY98 back to FY96.

(Ch-2):

A second Early Operational Assessment (EOA) was conducted as a result of last year's change in lead ship award from FY96 to FY98.

9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Planning Estimate:

Milestone I, Acquisition Decision Memorandum dated 19 Jan 93, subject "LPD 17 Class Amphibious Assault Ship Program."

(U) Approved Program: None.

10. (U) Performance Characteristics:

a. (U) Performance --

PE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
----	--------------------------------------	-------------------	------------------

(b)(1)



Amphibious Warfare

Embarkation (NET)

Troops	720	N/A	/ N/A	TBD	720
Vehicles (Sq Ft)(k)	25	N/A	/ N/A	TBD	25
Cargo (Cubic Feet)(k)	25	N/A	/ N/A	TBD	25
Bulk Fuel (Gals)(k)	300	N/A	/ N/A	TBD	300
LCAC	2	N/A	/ N/A	TBD	2
VTOL Land/Launch Spots (CH-46 or CH-53E)	4/2	N/A	/ N/A	TBD	4/2
VTOL Maint/Storage (CH-46 or CH-53E)	2/1	N/A	/ N/A	TBD	2/1

Ship To Shore

Capability (LCAC)

Sustained Operations (reloaded LCACs)(mins)	285	N/A	/ N/A	TBD	285
Well Deck Cycle Time (min/cycle)	35	N/A	/ N/A	TBD	35

Vertical Assault

Capability

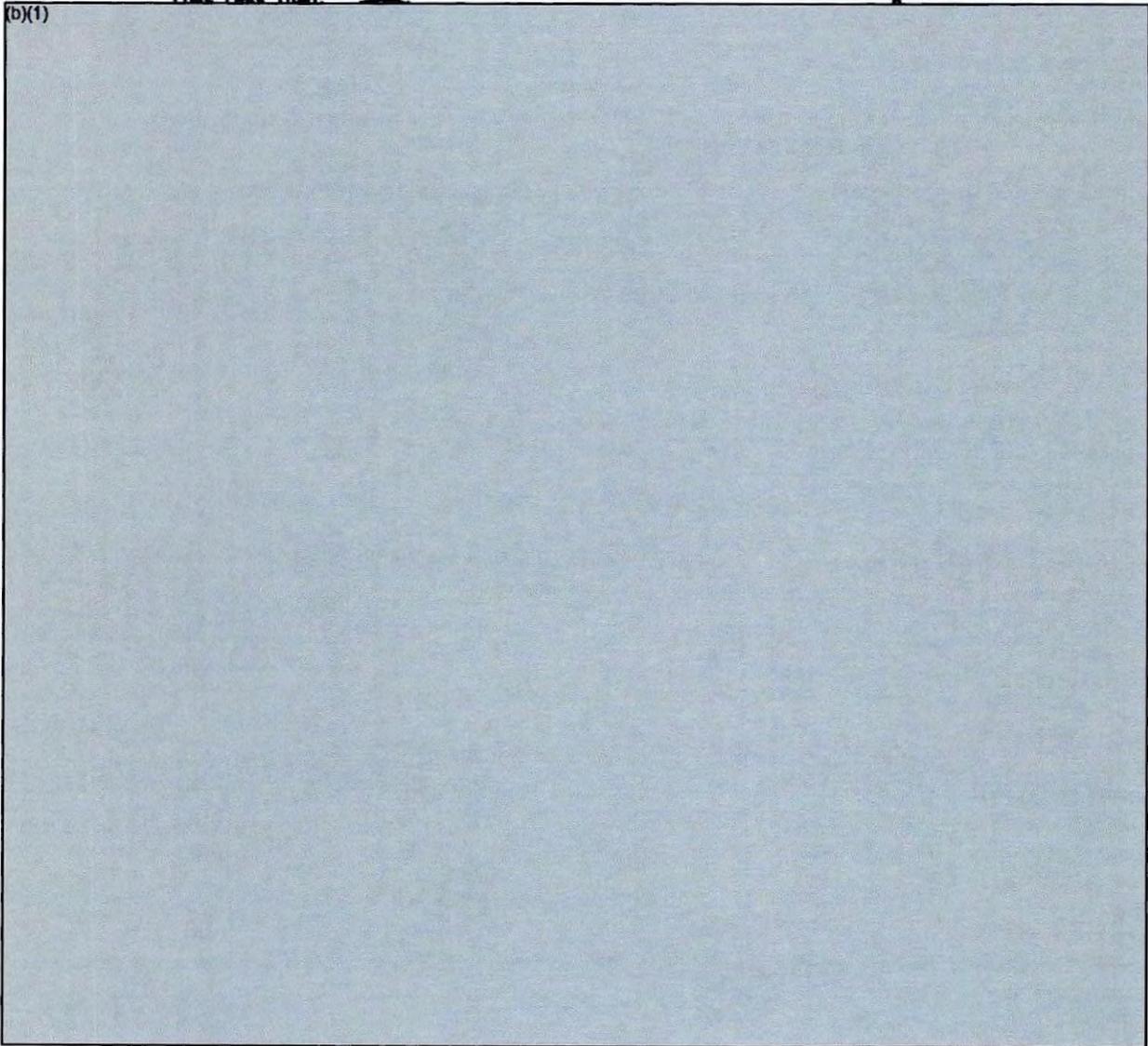
External Load (min)	30	N/A	/ N/A	TBD	30
Internal Load (min)	25	N/A	/ N/A	TBD	25
Reliability	0.86	N/A	/ N/A	TBD	0.86
Operational Availability (Ao)	0.80	N/A	/ N/A	TBD	0.80
Maintainability	TBD	N/A	/ N/A	TBD	TBD

10a. (U) Performance Characteristics (Cont'd):

	Approved Program	Demon- strated	Current
PE	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

Survivability
Probability of Ship
Loss Less than:

(b)(1)



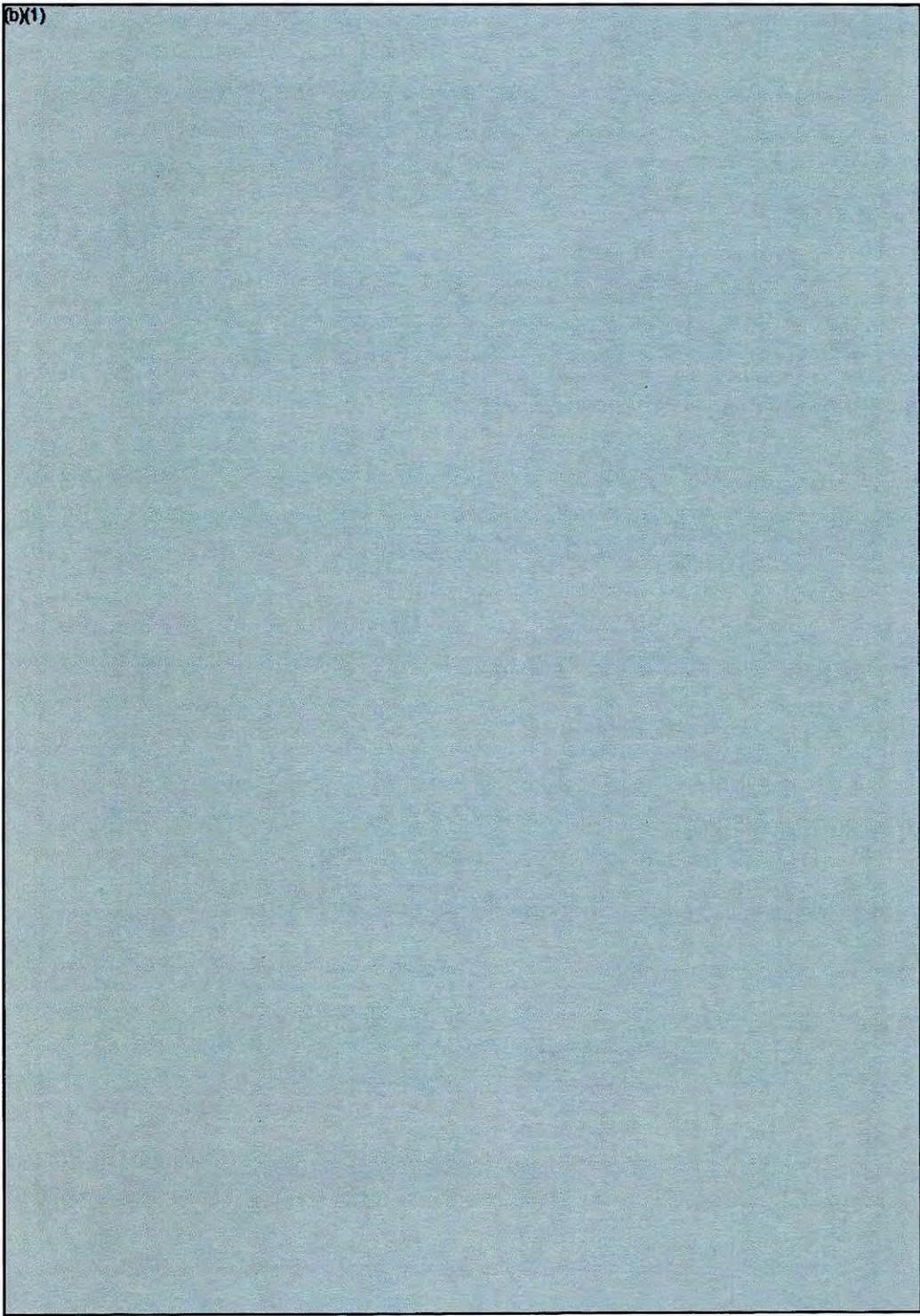
Footnotes:

LCAC - A second LCAC can be carried by converting vehicle space in the well deck.

[REDACTED]

LPD 17 Class, December 31, 1995

(b)(1)



[REDACTED]

LPD 17 Class, December 31, 1995

10b. (U) Performance Characteristics (Cont'd):

b. (U) Previous Change Explanations --

The Current Estimate of loss probability was revised to correct an omission/error and equals the Planning Estimate.

c. (U) Current Change Explanations --

(Ch-1):

The Joint Requirements Oversight Council (JROC), via JROCM 088-95 of 19 June 1995, stated that the above Self-Defense characteristics were not viewed as key warfighting requirements for the LPD-17. Therefore, these characteristics are no longer applicable and will be removed in future APB and Milestone II SAR submissions.

d. (U) References --

(U) Planning Estimate:

Milestone I, Acquisition Decision Memorandum dated 19 Jan 93, subject "LPD 17 Class Amphibious Assault Ship Program."

(U) Approved Program: None.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Planning <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (NDT&E)	61.1	0.0	73.9
Procurement	0.0		0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0		0.0
Ops. and Maint. (OSM)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	61.1	0.0	73.9
Escalation	-2.0	0.0	-1.0
Development (NDT&E)	(-2.0)	(0.0)	(-1.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (OSM)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	59.1	0.0	72.9

LPD 17 Class, December 31, 1995

11b. (U) Total Program Cost and Quantity (Cont'd):

	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	N/A	N/A
Procurement	0	N/A	N/A
Total	0	N/A	N/A

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

FY 1995 President's Budget, dated February 7, 1994.

(U) Approved Program: None.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 92 APB)	<u>Percent</u> <u>Change</u>
a. (U) <u>Total Program</u>			
(1) Cost (BY968)	0.0	0.0	
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Procurement

(1) Cost (BY968)	0.0	0.0	
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

LPD 17 Class, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDSE	PRDC	MILCON	TOTAL
Planning Estimate	59.1	0.0	0.0	59.1
Previous Changes:				
Economic	+0.2	-	-	+0.2
Quantity	-	-	-	-
Schedule	+5.4	-	-	+5.4
Engineering	+3.5	-	-	+3.5
Estimating	+5.9	-	-	+5.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+15.0	-	-	+15.0
Current Changes:				
Economic	-0.1	-	-	-0.1
Quantity	-	-	-	-
Schedule	-3.0	-	-	-3.0
Engineering	-	-	-	-
Estimating	1.9	-	-	+1.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-	-	-1.2
Total Changes	+13.8	-	-	+13.8
Current Estimate	72.9	-	-	72.9

LPD 17 Class, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	ROT&E	PROC	MILCON	TOTAL
Planning Estimate	61.1	0.0	0.0	61.1
Previous Changes:				
Quantity	-	-	-	-
Schedule	+4.6	-	-	+4.6
Engineering	+3.5	-	-	+3.5
Estimating	+5.7	-	-	+5.7
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+13.8	-	-	+13.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-2.9	-	-	-2.9
Engineering	-	-	-	-
Estimating	1.9	-	-	+1.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.0	-	-	-1.0
Total Changes	+12.8	-	-	+12.8
Current Estimate	73.9	-	-	73.9

b. (U) Previous Change Explanations --

ROT&E

- Economic: Revised escalation indices.
- Schedule: Revised lead ship award schedule (FY96 to FY98).
- Engineering: Combat System Upgrade.
- Estimating: Continued design optimization; returned cost adjustments; current and prior inflation adjustments.

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13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-0.1
Revised lead ship award schedule (From FY98 back to FY96) (Schedule)	-2.9	-3.0
Adjustment for Current and Prior Inflation. (Estimating)	-0.5	-0.5
Total Ship Integration Development (Estimating)	+2.4	+2.4
 RD&E Subtotal	<u>-1.0</u>	<u>-1.2</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not Applicable.

15. (U) Contract Information: None.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 50.0% (7 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 83.8% (\$61.1 / \$72.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY90-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2003)</u>	<u>Total</u>
RD&E	55.7	5.4	4.3	7.5	72.9
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	55.7	5.4	4.3	7.5	72.9

LPD 17 Class, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base - Years	Total Three-Year S			Escl Rate (%)
		Nonrec	Res		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				0.6	0.5	0.5	0.5	4.0
1991				5.4	4.9	4.9	4.9	4.3
1992				1.3	1.2	1.2	1.2	2.8
1993				10.8	10.3	10.3	10.0	2.7
1994				28.7	28.0	28.0	26.0	2.0
1995				10.9	10.8	9.8	6.7	1.9
1996				5.3	5.4	1.9		2.0
1997				4.1	4.3			2.2
1998				0.8	0.8			2.2
1999				0.6	0.6			2.3
2000				2.3	2.5			2.2
2001								2.2
2002				0.9	1.0			2.2
2003				2.2	2.6			2.2
Subtot				73.9	72.9	56.6	49.3	
Grand Total				73.9	72.9	56.6	49.3	

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17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules -- None
- b. (U) Costs -- None.
- c. (U) Contractor Support Costs -- None.

*** UNCLASSIFIED ***

A-11 CSSCS

029

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)
PROGRAM: CSSCS

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Combat Service Support Control System (CSSCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PM STCCS
ATTN: SFAE-C3S-STR-CSS
6052 MEADE ROAD
FT BELVOIR, VA 22060-5260
LTC STEPHEN E. BROUGHALL
Assigned: July 7, 1995
AV 656-5312 COMM (703) 806-5312

4. Program Elements/Procurement Line Items:

RDT&E:
PE 63805 (Shared) Project D091, D2GT
PROCUREMENT:
APPN 2035 ICN W34600 (Army)
APPN 2035 ICN BS9706 (Army)

5. Related Programs:

CSSCS is an integral part of the Army Tactical Command and Control System (ATCCS) which is a component of Army Battle Command System (ABCS). Other inter-related programs are: Maneuver Control System (MCS), All-Source Analysis System (ASAS), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command, Control (FAADC2) System and ATCCS Common Hardware and Software (CHS), and Standard Integrated Command Post Systems (SICPS).

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6. Mission and Description:

The Combat Service Support Control System (CSSCS) is one of the five Battlefield Functional Area (BFA) systems which comprise the Army Tactical Command and Control System (ATCCS). The CSSCS will support Fire Support, Air Defense, Maneuver Control, and Intelligence-Electronic Warfare BFAs in the Active Army, Army Reserve and National Guard components. The CSSCS will provide critical logistical, personnel, medical, and financial information to force and theater level commanders in a timely, integrated and accurate fashion. This automated processing of critical data from the Combat Service Support (CSS) Standard Army Management Information Systems (STAMIS) and from subordinate organizational headquarters will be analyzed and integrated into informational reports for evaluating current and projected sustainment capabilities. The CSSCS will correct the deficiencies of the current manual CSS Command and Control (C2) system that severely hampers the ability of the CSS Commanders to evaluate CSS information with respect to the maneuver commander's course of action.

The CSSCS also provides CSS Commanders and their staffs with automated C2 capabilities, including CSS planning, decision support, critical resource tracking, access to the ATCCS common battlefield picture, briefing support, preparation and dissemination of orders and information exchange with other ATCCS BFA systems.

The CSSCS will include ATCCS common hardware, ATCCS Common Software, CSSCS-unique software and any CSSCS-unique hardware identified during development. This hardware and software, housed in the Standard Integrated Command Post System (SICPS) family of shelters, will enable CSS commanders and staffs to receive, analyze, process, and disseminate essential and critical C2 information to more effectively manage resources to support the maneuver commander's scheme of operation.

7. Program Highlights:

a. Significant Historical Developments --
Program Executive Officer Command and Control Systems (PEO CCS) chartered the Combat Service Support Control System (CSSCS) Project Management Office on 22 February 1988 to support decisions on the employment of resources and to communicate these decisions to support elements. In FY89, the CSSCS program was designated a Major Defense Acquisition Program. CSSCS was approved for Engineering and Manufacturing Development by the Army Systems Acquisition Review Council (ASARC) in December 1990. On 1 February 1991, the Version 3 & 4 software development contract was awarded to TRW. During September-October 1992, the CSSCS EUT&E was successfully held and demonstrated that the system was easily learned, user friendly, and provided meaningful logistics data which assisted the commander in assessing the sustainability and supportability of combat operations. In June 1993, the Army decided at the ATCCS Operational Test Readiness Review (OTRR) to delay the CSSCS Initial Operational Test

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7a. Program Highlights (Cont'd):

and Evaluation (IOT&E) until the fourth quarter FY94 and to conduct a Limited User Test (LUT) in the last quarter of FY93. An Enhanced Program Stability Panel met on 23 August 1993 to review the Acquisition Program Baseline (APB) schedule breach as well as the overall CSSCS acquisition strategy. The panel concluded that the postponement of the IOT&E and introduction of the LUT were justified as prudent management actions. The panel also requested a validation of the CSSCS life cycle costs, and following validation, a revised APB was submitted to HQDA and approved by Army Acquisition Executive (AAE) on 22 February 1994. The LUT was concluded with the successful completion of III Corps' Phantom Sabre in November 1993. Formal training to support the IOT&E began on 9 May 1994 with a total of 75 students completing the first three week operator/maintainer course on 27 May 94. Training continued until the start of the pilot phase on 18 July. The eight day pilot phase was conducted with CSSCS arrayed in a Division/Corps arrangement with 8 division nodes and 7 corps level nodes. This required using 26 CSSCS systems communicating between nodes via Local Area Network (LAN), Single Command Ground and Air Radio System (SINGARS), Mobile Subscriber Equipment (MSE) and wire. At the end of the pilot phase, TEXCOM began the control phase of the IOT&E which continued until the conclusion of the III Corps Run Runner Field Training Exercise (FTX) on 16 September 1994. With the completion of the IOT&E, TEXCOM began preparation of the test report in support of the Milestone III ASARC. Following the IOT&E, CSSCS participated in the second phase of the ATCCS Integrated Interoperability Demonstration Experiment (IIDE) at Ft Lewis. This experiment successfully demonstrated the exchange of information with the other four ATCCS nodes using free text messages, United States Message Text Format (USMTF) messages, exchange of pictures using frame grabber and connecting remotely to MCS Version 12 prototype. In December 1993, the Army decided to consolidate PM CSSCS with PM Army WWMCS Information Systems (AWIS) and PM Standard Theater Army Command and Control System (STACCS). During August 1994, staff members from CSSCS met with AWIS and STACCS to prepare the Request for Proposals (RFP) for the new Army Global Command and Control System (AGCCS) which resulted in a contract award in December 1994. The Director of Requirements, Assistant Deputy Chief of Staff for Operations and Plans Force Development (ADCSOPS-FD), was briefed concerning the CSSCS Required Operational Concept (ROC) to Operational Requirements Document (ORD) conversion with the purpose to crosswalk the ROC requirements to the new ORD and to obtain ODCSOPS approval. The ADCSOPS-FD, approved the CSSCS ORD on 9 December 1994. The CSSCS Milestone III Preliminary Army Systems Acquisition Review Council (Pre-ASARC), chaired by the Military Deputy to the Assistant Secretary of the Army for Research, Development and Acquisition, was held on 24 February 1995. On 27 March 1995 the AAE approved the Acquisition Decision Memorandum (ADM)

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7a. Program Highlights (Cont'd):

resulting from the Pre-ASARC. The ADM authorized the PM to enter into Low Rate Initial Production (LRIP), to procure CHS-2 hardware and begin the CSSCS transition to that platform. An IOT&E-II will be held in September-November 1996 to support a decision to enter full rate production and deployment. The ADM also directed that a Version 4 LUT be conducted in FY97 and an Version 5 FOT&E be conducted in FY99. Changes to the CSSCS schedule required by the ADM were incorporated into a revised APB, which was approved by the AAE on 23 June 1995. On 16 March CSSCS completed its efforts of Confederation Models testing at the Warrior Preparation Site, Kaiserslautern, Germany. On 20 April 1995, an information briefing was given to the Deputy Assistant Secretary of Defense (C3I) recapping the proceedings of the CSSCS Milestone III Pre-ASARC and the resulting ADM. The meeting was well received and satisfied the requirement to brief the OSD C3I Committee. During May 1995, the focus of the PM office was on planning, preparation and execution of PRAIRIE WARRIOR 95 at Fort Leavenworth, KS. Work included coordinating with simulations and models to ensure rapid and correct data input to and from CSSCS. A prime objective was to coordinate the development of an on-line interface with the Combat Service Support Training Simulation System (CSSTSS) for all future PRAIRIE WARRIOR and Army Warfighter Experiment-related activities. On 12 May 1995 the CSSCS team completed the initial setup of garrison operations at 2d Armored Division Support Command (DISCOM). These systems communicated daily over modems, providing the DISCOM Commander and staff with operational status of 2d Armored Division critical Class VII and Class IX items. This network was expanded using a combination of additional modems and the Fort Hood LAN. During the latter half of May 1995, the PM office supported the Team Fort Monmouth demonstration of sensor-to-target electronic capabilities for Force XXI at the annual AUSA Spring Symposium at Santa Clara, CA.

b. Significant Developments Since Last Report --
None.

The CSSCS system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
On 21 February 1996 the CSSCS Horseblanket Review found that the only outstanding issue continues to be the funding shortfall for Operational Test and Evaluation Command/Test and Experimentation Command (OPTEC/TEXCOM) participation in the CSSCS September-November 1996 Initial Operational Test and Evaluation-II (IOT&E-II) and the September-November 1997 Limited User Test (LUT). The plan to fund these events continues.

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8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 23 Jun 1995. There are no Nunn-McCurdy unit costs breaches.

9. Schedule:

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ROC Approved	JUL 88	JUL 88	JUL 88
Solicitation Issued	JUN 90	JUN 90	JUN 90
ROC Revised	SEP 90	SEP 90	SEP 90
Milestone I/II (ASARC)	DEC 90	DEC 90	DEC 90
Dev Contract Award (V 3&4)	FEB 91	FEB 91	FEB 91
SDR Version 3	MAY 91	MAY 91	MAY 91
SRS Version 3	SEP 91	SEP 91	NOV 91
PDR Version 3	DEC 91	DEC 91	MAR 92
CDR Version 3	MAR 92	MAR 92	JUN 92
Begin Version 4 Prototyping	JUL 92	OCT 92	OCT 92
EUT&E Version 3			
Start	N/A	SEP 92	SEP 92
Complete	N/A	OCT 92	OCT 92
Tech Test Version 3			
Start	NOV 92	APR 93	APR 93
Complete	JAN 93	JAN 94	JAN 94
Begin Version 4 Development	MAR 93	DEC 94	DEC 94
LUT Version 3			
Start	N/A	SEP 93	SEP 93
Complete	N/A	NOV 93	NOV 93
IOT&E Version 3			
Start	FEB 93	JUL 94	JUL 94
Complete	APR 93	SEP 94	SEP 94
ASARC (LRIP)	N/A	APR 95	APR 95
ASARC (MS III Full Production)	AUG 93	MAR 97	MAR 97
OIPT Review	SEP 93	MAR 97	MAR 97
Begin Version 3 Fielding	APR 94	JUN 97	JUN 97
First Unit Equipped	APR 93	JUN 97	JUN 97
IOC Version 3	APR 94	OCT 97	OCT 97
SDR Version 4	N/A	AUG 95	DEC 95 (Ch-1)
PDR Version 4	SEP 93	DEC 95	APR 96 (Ch-1)
CDR Version 4	DEC 93	DEC 95	MAY 96 (Ch-1)
IOT&E II Version 3			
Start	N/A	SEP 96	SEP 96
Complete	N/A	NOV 96	NOV 96
Begin Version 5 Development	MAR 95	JAN 97	JAN 97

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Tech Test Version 4			
Start	MAY 95	MAY 97	MAY 97
Complete	JUN 95	JUN 97	JUN 97
LUT Version 4			
Start	AUG 95	SEP 97	SEP 97
Complete	OCT 95	NOV 97	NOV 97
PEO IPR - Version 4	N/A	DEC 97	DEC 97
Begin Fielding Version 4	NOV 95	JAN 98	JAN 98
PDR Version 5	JUL 96	APR 97	APR 97
CDR Version 5	DEC 96	JUL 97	JUL 97
Tech Test Version 5			
Start	JUN 97	MAY 98	MAY 98
Complete	JUL 97	JUN 98	JUN 98
FOT&E Version 5			
Start	AUG 97	SEP 98	SEP 98
Complete	OCT 97	NOV 98	NOV 98
PEO IPR - Version 5	N/A	DEC 98	DEC 98
Begin Fielding Version 5	NOV 97	JAN 99	JAN 99
Complete Fielding CSSCS	SEP 01	N/A	N/A

- (ROC) Required Operational Concept
- (SDR) System Design Review
- (SRS) Software Requirements Specification
- (PDR) Preliminary Design Review
- (CDR) Critical Design Review
- (IOT&E) Initial Operational Test and Evaluation
- (EUT&E) Early User Test and Experimentation
- (FOT&E) Follow-on Operational Test and Evaluation
- (LUT) Limited User Test
- (PEO-IPR) Program Executive Officer In-Progress Review

b. Previous Change Explanations --

The CSSCS IOT&E was rescheduled to the July-September 1994 time period with a Limited User Test (LUT) held in the September-November 1993 time period based on the Army's decision to delay IOT&E. The major drivers behind the decision to delay IOT&E were: the adjustments to the ATCCS acquisition strategy and the resultant impact on ATCCS Horizontal Interoperability; PM CSSCS, CASCOM and OPTEC-TEXCOM test documentation and planning delays; III Corps' lack of identification of units to participate in testing; delays in completing the CSSCS Version 3 software; and the approximately three week delay in the start of formal CSSCS Technical Testing. The

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9b. Schedule (Cont'd):

delay in the IOT&E and other milestones dependant on it resulted in a schedule breach, and a requirement to restructure the CSSCS Acquisition Program Baseline (APB) and to conduct an Enhanced Program Stability Panel Meeting. The panel, which met in August 1993, reviewed the baseline breach as well as the overall CSSCS acquisition strategy, and concluded that postponing the IOT&E and introducing an LUT were justified as prudent management actions. The panel also approved the deletion of the Complete Fielding milestone because of its vulnerability to be continuously breached due to annual budget perturbations. This milestone was deleted in the revised APB submitted to HQDA in December 1993. Changes to the schedule in 1993 were due to the revised APB submitted in response to the schedule breach. That APB was approved on 22 February 1994. Changes to the February 1994 APB were caused by the planned consolidation of PM CSSCS with PM AWIS and PM STACCS in July 1995, and the actual scheduling of the ASARC III. Begin Version 4 milestone was moved to match the new consolidated contract award date of December 1994. All other milestones changed based on the ASARC III scheduled date of 3 April 1995. The addition of an FOT&E Version 3 milestone was to ensure corrections resulting from the IOT&E were implemented before full fielding. Other changes to the PM CSSCS schedule were caused by the decisions at the Pre-ASARC III resulting in the Acquisition Decision Memorandum (ADM) dated 27 March 1995. The ADM approved the planned fielding of the CSSCS with Version 3 software and Common Hardware Software-1 (CHS-1) hardware to III Corps; to enter into a Low Rate Initial Production (LRIP) to procure CHS-2 hardware and begin the CSSCS transition to that platform. An IOT&E-II was directed to be held in mid-to-late 1996 to support a decision to enter into full rate production and deployment. FOT&E Version 4 was to be renamed LUT Version 4, and an FOT&E was directed for FY99. All changes were incorporated into a revised Acquisition Program Baseline (APB), which was approved by the AAE June 23, 1995.

c. Current Change Explanations --

(Ch-1) The CSSCS schedule is essentially unchanged from the June 23, 1995 Acquisition Program Baseline. A total of three minor changes, all within six months of the approved program, have occurred based on administrative/scheduling issues:

	FROM	TO
SRS Version 4	Aug 95	Dec 95
PDR Version 4	Dec 95	Aug 96
Version 4 CDR	Dec 95	May 96

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9d. Schedule (Cont'd):

d. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 23, 1995.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Operational Temp (degF)	0-+120	0-+120 / +40-+95	TBD	+40-+95
Relative Humidity (%)	10-80	10-80 / 10-80	TBD	10 - 80
Portability (no. person carry)	2	1 / 2	TBD	2
Equipment Set-up/Tear-down (hrs)	<=.5	<=.5 / <=.5	TBD	<=.5
Mean Time Between Op Man Failure (hrs)				
ACCS Hardware	220	220 / 220	TBD	220
ACCS CHS & CSSCS Software (HW&SW)	210	140 / 140	TBD	140
Automatic Msg Handling				
User Responsiveness				
Disp 24 Lines (sec)	1.0	.7 / 5.0	.1	.1
Scroll (lines/sec)	20	28 / 20	21.6	21.6
Error Feedback (sec)	1.0	.7 / 1.0	1.0	1.0
User Help Req (sec)	3.0	2.1 / 3.0	3.0	3.0
Auto-message handling				
Speed-in (sec)	10/500	7/500 / 10/500	6.5	6.5
Speed-out (sec)	10/1000	7/1000 / 10/1000	46 sec	46 sec
Msg Trans and Receipt				
24 hr USMTF Trans	334	477 / 334	334	334
24 hr Recpt&Process (million char)	6.9	9.86 / 6.9	8.4	8.4
(STAMIS msgs)	4400	6286 / 4400	5350	5350
Capable of Update (every x hrs)	3	2 / 3	2.4	2.4

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10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Process All Info Rec (within x hrs)	3	2	/ 3	.9	.9
On-Line Query Resp Time (sec/min)	5/180	5/7	/ 2/3	1.6 min	1.6 min
Local Data File Update Response Time (sec/min) (sec)	5/180	5/7	/ 5/15	6.3 min	6.3 min

Demonstrated performance characteristics of TBD will be changed to reflect actual test results following CHS-2 hardware testing.

* USMTF is the abbreviation for United States Message Text Format.

b. Previous Change Explanations --

Operational temperature estimate changed from 0-+120 degrees F to +40-+95 degrees to correct estimate error in previous SAR. The Mean Time Between Operational Mission Failure for the ATCCS CHS & CSSCS Software (HW&SW) changed from 210 hours to 140 hours due to the revision of the Reliability and Maintainability (RAM) Rationale, and was independently verified by the Combined Arms Support Command (CASCOM) and the Army Materiel Systems Analysis Activity (AMSAA). Estimated figures were revised to reflect results of the IOT&E as follows: User Responsiveness (Disp 24 lines (sec)) from 1.0 to 0.1; Scroll (lines/sec) from 20 to 21.6; Msg Trans and Receipt (24 hr Recpt & Process (mil char)) from 6.9 to 8.4; STAMIS msgs from 4400 to 5350; Capable of Update every x hours from 3 to 2.4; Process All Info Rec (within x hours) from 3 to .9; On-Line Query Resp Time (sec/min) from 5-180 sec to 1.6 min; and Local Data File Update Response Time (sec/min) from 5-180 sec to 6.3 min.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 23, 1995.

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11. Total Program Cost and Quantity (Current Dollars in Millions):

	Development	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. Cost --			
Development (RDT&E)	114.5	128.8	129.8
Procurement	131.6	89.7	94.0
Flyaway	(122.2)		(90.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(9.4)		(3.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	246.1	218.5	223.8
 Escalation	44.6	47.9	45.0
Development (RDT&E)	(11.5)	(12.0)	(11.0)
Procurement	(33.1)	(35.9)	(34.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	290.7	266.4	268.8

The unit of measure for CSSCS is the number of systems, High Capacity Computer Units (HCU).

b. Quantity --			
Development (RDT&E)	84	104	104
Procurement	<u>1031</u>	<u>1115</u>	<u>1115</u>
Total	1115	1219	1219

The April 1995 LRIP decision authorized purchase of up to 10% of the procurement quantity (111 systems).

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- None.
- e. References --

Development Estimate:

Army Acquisition Executive Memorandum, ASARC II, dated 26 December 1990, Subject: ASARC Acquisition Decision Memorandum (Combat Service Support Control System) and AAE Approved Acquisition Program Baseline dated 31 October 1991.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 23, 1995.

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12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUN 95 APB)	<u>Percent</u> <u>Change</u>	
a. Total Program				
(1) Cost (BY91\$)	223.8	218.5		
(2) Quantity		(2) Quantity		1219
(3) Unit Cost	0.184	0.179	2.43	
b. Procurement				
(1) Cost (BY91\$)	94.0	89.7		
(2) Quantity	1115	1115		
(3) Unit Cost	0.084	0.080	4.79	

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	126.0	164.7	0.0	290.7
Previous Changes:				
Economic	-1.9	+1.9	-	-
Quantity	-	+10.4	-	+10.4
Schedule	-	+18.6	-	+18.6
Engineering	-	-	-	-
Estimating	+14.5	-66.8	-	-52.3
Other	-	-	-	-
Support	-	-5.6	-	-5.6
Subtotal	+12.6	-41.5	-	-28.9
Current Changes:				
Economic	-2.3	-5.7	-	-8.0
Quantity	-	-	-	-
Schedule	-	-0.4	-	-0.4
Engineering	-	-	-	-
Estimating	4.5	10.8	-	+15.3
Other	-	-	-	-
Support	-	0.1	-	+0.1
Subtotal	+2.2	+4.8	-	+7.0
Total Changes	+14.8	-36.7	-	-21.9
Current Estimate	140.8	128.0	-	268.8

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	114.5	131.6	0.0	246.1
Previous Changes:				
Quantity	-	+7.7	-	+7.7
Schedule	-	+0.2	-	+0.2
Engineering	-	-	-	-
Estimating	+11.9	-46.5	-	-34.6
Other	-	-	-	-
Support	-	-5.5	-	-5.5
Subtotal	+11.9	-44.1	-	-32.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	3.4	6.6	-	+10.0
Other	-	-	-	-
Support	-	-0.1	-	-0.1
Subtotal	+3.4	+6.5	-	+9.9
Total Changes	+15.3	-37.6	-	-22.3
Current Estimate	129.8	94.0	-	223.8

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: Revision due to FY Reprogrammed funds not included in initial SAR. Decision to procure LCUs with RDT&E vs OPA funds for IOT&E.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Quantity: Increased units from 1102 to 1115.

Schedule: Variance associated with Quantity Increase from 1102 to 1115. Change in procurement schedule FY95-FY06.

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13b. Cost Variance Analysis (Cont'd):

Estimating: Decreased estimate due to Funding Profile Changes.
 Support: Decreased Initial Spares requirement.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.3
Adjustment for Current and Prior Inflation. (Estimating)	+1.2	+1.2
Decrease due to funding profile changes. (Estimating)	-0.6	-0.3
Additional funding for operational testing. (Estimating)	+2.8	+3.6
	<u> </u>	<u> </u>
RDT&E Subtotal	+3.4	+2.2
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-5.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Accelerate annual procurement buy profile. (Schedule)	--	-0.4
Decrease due to lower fielding costs under LRIP. (Estimating)	-1.1	-1.2
Increase due to change in funding profile. (Estimating)	+7.2	+11.5
Adjustment to Initial Spares due to change in funding profile. (Support)	-0.1	+0.1
	<u> </u>	<u> </u>
Procurement Subtotal	+6.5	+4.8

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.261	-0.007	-0.013	0.015	--	-0.030	--	-0.005	-0.040	0.221

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15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
<u>CSSCS VERSIONS 3 & 4:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TRW, INC, CARSON, CA			\$61.6	N/A	0
DAAB07-91-C-N501, CPAF					
Award: February 1, 1991					
Definitized: February 1, 1991					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$74.7	N/A	0	\$74.5	\$74.7	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
			\$0.6	\$-0.1	
Cumulative Variances To Date (02/29/96)			<u>\$0.5</u>	<u>\$0.0</u>	
Net Change			\$-0.1	\$0.1	

Explanation of Change:

Cost and schedule variances are considered insignificant.

This is the last time this contract will appear in the SAR. It is over 90% complete, and is scheduled to end on 30 April 1996.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 50.0% (10 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 47.4% (\$127.3 / \$268.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY87-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2006)	<u>Total</u>
RDT&E	102.2	12.1	11.1	15.4	140.8
Procurement	6.0	7.0	6.7	108.3	128.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	108.2	19.1	17.8	123.7	268.8

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16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1987			2.2	2.2	1.9	1.9	1.9	2.7
1988			3.5	3.5	3.2	3.2	3.2	3.0
1989			5.1	5.1	4.8	4.8	4.8	4.2
1990			4.5	4.5	4.4	4.4	4.4	4.1
1991			8.9	8.9	9.1	9.1	9.1	4.3
1992			20.5	20.6	21.6	21.6	21.5	3.0
1993			17.2	17.3	18.6	18.6	17.0	2.4
1994			18.7	18.9	20.6	20.6	20.0	2.0
1995			16.1	16.1	18.0	13.3	1.1	1.9
1996			10.3	10.6	12.1			2.0
1997			9.2	9.5	11.1			2.2
1998			4.7	5.0	5.9			2.2
1999			4.6	4.8	5.9			2.3
2000								
2001								
2002			2.8	2.8	3.6			
Subtot	104		128.3	129.8	140.8	97.5	83.0	

CSSCS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1995	73		5.1	5.3	6.0	5.9	3.0	1.9
1996	38		5.8	6.0	7.0	2.2		2.0
1997	51		5.4	5.6	6.7			2.2
1998	50		4.7	5.0	6.1			2.2
1999	56		4.5	4.8	6.0			2.3
2000	145		10.4	11.2	14.2			2.2
2001	145		10.0	10.4	14.1			2.2
2002	137		10.1	10.4	14.6			2.2
2003	150		10.0	10.4	15.0			2.2
2004	90		6.4	6.6	9.8			2.2
2005	79		6.3	6.5	10.0			2.2
2006	101		11.5	11.8	18.5			2.2
Subtot	1115		90.2	94.0	128.0	8.1	3.0	
Grand Total	1219		218.5	223.8	268.8	105.6	86.0	

CSSCS, December 31, 1995

17. Production Rate Data:

a. Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	104/104
	Procurement	111/111
b. Approved Design-to-Cost Objective --	N/A.	

The CSSCS will utilize Common Hardware equipment. There is no Design-to-Cost Objective for the program.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The concept of operation is for CSSCS to be fielded in both active and reserve units. The total manhours of operation per year for active duty units per device is 4745 hours during wartime, 2372.5 hours during peacetime, and 234 hours for reserve units. There are no new personnel costs involved, as CSSCS will be operated by personnel currently assigned to those organizations receiving these devices. The present maintenance concept for the CHS hardware is contractor logistics support for the operational life of the equipment, not to exceed ten years. Contractor will establish Regional Support Centers (RSC), which will provide all repairs above the unit level. Unit level maintenance consists of preventive maintenance, replacement of Line Replaceable Units (LRU), and replacement of expendable items (cables, batteries, fuses, and filters). Internal repair of LRUs requiring removal of covers will not be performed by U.S. Army personnel. Units will exchange unserviceable LRUs for serviceable LRUs through assigned Intermediate Direct Support (IDS) facilities. The IDS will perform fault verification and ship unserviceable LRUs to the nearest RSC for repair. There is no antecedent equipment for the CSSCS. It will replace current manual and non-standard automated processes. PM CSSCS will not be provided funding for O&S costs. All O&S costs will be funded at the unit level after delivery.

The Average Annual Cost is for the entire CSSCS system and is based on sustainment from FY 95-26. Source: Army Cost Position, March 1995.

CSSCS, December 31, 1995

18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CSSCS System	Avg Annual Cost Per Antecedent System
Personnel	1.5	N/A
O&S Consumables	0.6	N/A
Direct Depot Maintenance	3.5	N/A
Sustaining Investment	1.4	N/A
Other Costs	0.6	N/A
Total	7.6	N/A

c. Contractor Support Costs -- None.

A-5 ATACMS/BAT

027

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: ATACMS/BAT

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
ATACMS/BAT

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

HQDA COL John W. Holly
 Program Executive Office Assigned: January 9, 1996
 Tactical Missiles, ATTN: SFAE-MSL-AB AV 746-1141 COMM 205-876-1141
 RedstoneArsenal, AL 35898-5650

4. (U) Program Elements/Procurement Line Items:

RDTE&E:

- PE 20302A (Shared) Project D685 (Shared), D686 (Shared)
- PE 63754A Project D600
- PE 64754A (Shared) Project D636
- PE 64768A Project D2NT, D641, D686, D687, D688

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(THIS PAGE IS UNCLASSIFIED)

John Campbell

96-C-0464

ATACMS/BAT, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 2032 ICN CA6100 (Army)
APPN 2032 ICN CA6105 (Army)
APPN 2032 ICN CA6110 (Army)

5. (U) Related Programs:

Multiple Launch Rocket System (MLRS) and Army Tactical Missile System (Army TACMS)

6. (U) Mission and Description:

The Army TACMS Block II and BAT systems support the Army's deep fires doctrine, which calls for the destruction and/or disruption of threat forces at ranges in excess of 100 kilometers. The BAT is a top attack submunition with acoustic and infrared (IR) seekers working in tandem for autonomous attack of moving armor. The BAT Preplanned Product Improvement (P3I) adds cold, sitting armor, heavy multiple launch rocket systems, and surface to surface missile transporter erector launchers to the target set through seeker and warhead improvements. BAT and BAT P3I submunitions are carried deep into enemy territory by variants of the Army TACMS missile, then dispensed to attack and destroy targets. Being a certified round, both the missile and submunition have a low sustainment cost. The Army TACMS Block II missile, a version of the currently fielded and combat-proven Army TACMS Block I missile, will carry 13 BAT/BAT P3I submunitions. The Army TACMS Block IIA missile, an extended range version of the Block II missile, will carry 6 BAT P3I submunitions to ranges in excess of 200 kilometers. The Army TACMS Block II and BAT Programs do not replace another system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The BAT program was established as a special access program and approved for execution 5 Jun 84. Phase I of the Proof of Principle (POP) program began Aug 84 with Northrop Corporation as the prime contractor, and Phase II began in Jun 85 with completion in Apr 89. An extended POP was approved May 89 to address specific technical issues which were later resolved. A Milestone II review was held in May 91, and an Engineering and Manufacturing Development (EMD) contract was awarded in Jun 91 to Northrop Corporation. The program was disestablished as a special access program and established as the BAT Project in Jun 91. Subsystem Critical Design Reviews (CDRs) began in Jan 92, with successful completion of the System Integration CDR in May 92. A 2 Nov 92 Defense Acquisition Board (DAB) directed restructure of BAT to a 54-month program to align with the Tri-Service Standoff Attack Missile (TSSAM) Program. In Dec 92, a successful sled test demonstration of BAT submunitions in a supersonic environment was completed. In Feb 93, the Joint Strategic

ATACMS/BAT, December 31, 1995

7a. (U) Program Highlights (Cont'd):

Systems Committee/Conventional Systems Committee (SSC/CSC) directed continuation of the BAT program with reduced quantities, and that the BAT P3I program continue with Army TACMS Block IIA as the carrier. In Nov 93, the BAT P3I Demonstration/Validation (Phase I) contract was awarded to Northrop Corporation. Army TACMS was designated in Nov 93 as the carrier for the BAT submunition; this resulted in a second restructure of the BAT EMD contract. In Dec 93, the Assistant Secretary of Army, Research, Development and Acquisition, directed the Army to terminate participation in the TSSAM program. The Army TACMS and BAT Project Offices were deactivated and reactivated as the Army TACMS-BAT Project Office in Apr 94. The CSC recommended in Jun 94 that the Army TACMS Block II, Block IIA, BAT, and BAT P3I programs be combined and documented under a single Acquisition Category (ACAT) ID major defense acquisition program (MDAP). The BAT EMD contract was modified in Nov 94 to change the delivery vehicle to the Army TACMS Block II. In Dec 94, BAT had two successful end-to-end design verification tests against a remotely controlled array of tanks and armored personnel carriers. The Army TACMS Block II Phase III Design Study was awarded to Loral Vought in Apr 94. In Dec 94, the BAT P3I Phase II Dem/Val contract option was exercised. The Army TACMS Block II Continued Development Program was approved by the AAE in May 95.

b. (U) Significant Developments Since Last Report --

The Army TACMS Block II Continued Development contract was awarded on 12 Jul 95 to Loral Vought Systems (LVS). The cost-plus-incentive-fee contract includes the basic, plus options for Engineering Development Tests (EDT), and Initial Operational Test and Evaluation (IOTE).

The BAT EMD contract which restructures the BAT program with Army TACMS Block II as the carrier was definitized on 8 Sep 95 with Northrop-Grumman.

On 9 Nov 95, BAT Design Verification Test (DVT) No. 6 was conducted at White Sands Missile Range (WSMR), NM. The target was missed by approximately 150 meters. Several anomalies were noted by the post flight analysis team. Corrective actions and verifications will be completed to support a retest (DVT No. 6b) scheduled for 2Q96.

BAT P3I completed System Design Review in Nov 95 and P3I seeker critical item development specifications were developed.

The Army TACMS/BAT program is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

On 9 Mar 96, BAT DVT No. 6b was conducted at WSMR. The BAT flew a stable flight and impacted a moving T-72 in a highly vulnerable area of the rear engine deck. The test successfully demonstrated the corrective actions taken as a result of DVT No. 6.

The Engineering Development Test (EDT) option, ATACMS Block II

ATACMS/BAT, December 31, 1995

7c. (U) Program Highlights (Cont'd):

Continued Development Contract DAAH01-95-C-001, was exercised on 8 Feb 96 for \$5.6M. Acceleration of these flight tests and associated effort mitigates the schedule risk inherent in existing BAT Milestone IIIA exit criteria which requires at least one missile flight test with a successful dispense prior to approval of low rate BAT production.

8. (U) Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline (APB), 22 Sep 95. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

BAT/BAT P3I

a. (U) Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
BAT			
Milestone 0	JUN 84	JUN 84	JUN 84
Milestone I	FEB 85	FEB 85	FEB 85
Milestone II	MAY 91	MAY 91	MAY 91
Preliminary Design Review	MAY 91	MAY 91	MAY 91
EMD/P&D Contract Award	JUN 91	JUN 91	JUN 91
Critical Design Review Complete	MAR 92	MAY 92	MAY 92
Prototype Production			
Start	DEC 92	N/A	APR 93
Complete	SEP 94	N/A	SEP 95
Design Verification Test			
Start	JAN 93	MAY 93	MAY 93
Complete	NOV 93	OCT 95	APR 96 (Ch-1)
First Prototype Unit Delivery	OCT 93	OCT 94	OCT 94
Contractor Development Test			
Start	NOV 93	FEB 96	MAY 96 (Ch-2)
Complete	SEP 94	MAR 97	APR 97 (Ch-3)
Long Lead Program Review	DEC 93	N/A	N/A
Long Lead Contract Award for LRIP	JAN 94	N/A	N/A
LRIP Program Review (DAB)	NOV 94	DEC 97	DEC 97
EMD/LRIP I Contract Award	NOV 94	JAN 98	JAN 98
LRIP First Unit Delivery	N/A	JUL 99	JUL 99
Submunition Readiness Date (IOC)	DEC 95	NOV 99	NOV 99
Milestone III	DEC 96	SEP 00	SEP 00
Production Contract Award	JAN 97	FEB 01	FEB 01
First Production Unit Delivery	JAN 98	JUL 02	JUL 02

ATACMS/BAT, December 31, 1995

9a. (U) Schedule (Cont'd):
BAT/BAT P3I

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
BAT P3I			
P3I Phase I Study Award	N/A	OCT 93	OCT 93
Milestone II	N/A	MAR 98	MAR 98
P3I EMD Contract Award	N/A	APR 98	APR 98
LRIP IPR	N/A	APR 01	APR 01
Milestone III	N/A	FEB 02	FEB 02

b. (U) Previous Change Explanations --

Critical Design Review changed due to delay of subcontractors/vendors receiving finalized system requirements. Changes were due to restructure of BAT EMD to a 54-month program and the addition of P3I Demonstration/Validation and EMD. Milestones changed due to restructure of the BAT program to align with the new delivery vehicle, Army TACMS Block II. BAT P3I milestones were added. Completion of Design Verification Test (DVT) slipped due to a cost reduction initiative (Army Cost Position Excursion, 7 Apr 95) which slipped completion of DVT into FY96.

c. (U) Current Change Explanations --

(Ch-1) - Completion of Design Verification Test (DVT) slipped from Oct 95 to Apr 96 due to hardware problems uncovered during DVT flights and subsystem qualification.

(Ch-2) - Start of BAT Contractor Development Test slipped from Feb 96 to May 96 due to delays encountered during DVT.

(Ch-3) - Completion date of BAT Contractor Development Test slipped from Mar 97 to Apr 97 due to delays encountered during DVT.

(Ch-4) - Milestone for P3I DEM/VAL was renamed P3I Phase I Study Award in Acquisition Program Baseline, 22 Sep 95.

d. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated September 22, 1995.

ATACMS/BAT, December 31, 1995

9d. (U) Schedule (Cont'd):
Army TACMS Blk II/Blk IIA

a. (U) Milestones --	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
BLOCK II ATACMS			
DA IPR	MAR 95	MAY 95	MAY 95
Continued Development Contract Award	MAY 95	JUN 95	JUL 95 (Ch-1)
Preliminary Design Review	MAY 96	OCT 96	OCT 96
Hardware Critical Design Review	FEB 97	MAR 97	MAR 97
Software Critical Design Review	MAY 97	JUN 97	JUN 97
Pre-production (PPT)			
Start	MAY 97	NOV 97	ADG 97 (Ch-2)
Complete	NOV 97	MAR 98	JAN 98 (Ch-2)
Production Qualification Tests (PQT)			
Start	DEC 97	JUN 98	APR 98 (Ch-2)
Complete	JUL 98	JAN 99	NOV 98 (Ch-2)
EMD OT Option Award	JAN 98	JAN 98	JAN 98
Combined DT/OT Test			
Start	JUL 98	APR 99	JAN 99 (Ch-2)
Complete	DEC 98	JUN 99	APR 99 (Ch-2)
PEO LRIP Decision	DEC 98	DEC 98	DEC 98
LRIP Contract Award	JAN 99	JAN 99	JAN 99
Operational Tests (OT)			
Start	DEC 99	DEC 99	DEC 99
Complete	MAR 00	JUN 00	JUN 00
LRIP First Delivery	JUN 00	JUN 00	JUN 00
MS III	SEP 00	SEP 00	SEP 00
IOC	SEP 00	SEP 00	SEP 00
Organic Support Capability	SEP 00	SEP 00	SEP 00
Service Depot Support	SEP 00	SEP 00	SEP 00
First Full Rate Production Contract Award	JAN 01	JAN 01	JAN 01
BLOCK IIA ATACMS			
Milestone IV P3I Review	MAR 98	MAR 98	MAR 98
EMD Contract Award	APR 98	APR 98	APR 98
Low Rate Initial Production Contract Award	JAN 02	JAN 02	JAN 02
MS III	FEB 02	FEB 02	FEB 02
Organic Support Capability	DEC 03	DEC 03	DEC 03
Service Depot Support	DEC 03	DEC 03	DEC 03
IOC	MAY 03	MAY 03	MAY 03

b. (U) Previous Change Explanations --

The DA IPR slipped due to Army Systems Acquisition Review Council (ASARC) principals not being available. Milestone dates changed due to program schedule being shifted to reflect available funding.

ATACMS/BAT, December 31, 1995

9c. (U) Schedule (Cont'd):
 Army TACMS Blk II/Blk IIA

c. (U) Current Change Explanations --

(Ch-1) - Continued Development Contract Award changed from Jun 95 to Jul 95 to reflect actual award date.

(Ch-2) - Milestones changed due to award of the Engineering Development Test Option in the contract which accelerates the previously agreed test schedule as follows:

MILESTONE	FROM	TO
ATACMS Block II		
Pre-Production (PPT)		
Start (EDT/PPT Series)	Nov 97	Aug 97
Complete (EDT/PPT Series)	Mar 98	Jan 98
Production Qual Tests (PQT)		
Start	Jun 98	Apr 98
Complete	Jan 99	Nov 98
Combined DT/OT Test		
Start	Apr 99	Jan 99
Complete	Jun 99	Apr 99

d. (U) References --

(U) Development Estimate:

AAE Acquisition Decision Memorandum (ADM), 15 May 95.

(U) Approved Program:

DAR Approved Acquisition Program Baseline dated September 22, 1995.

10. (U) Performance Characteristics:

BAT/BAT P3I

a. (U) Performance --	<u>DE</u>	<u>Approved Program</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
		<u>Objective/Threshold</u>			
BAT	N/A	N/A	/ N/A		
Weight (lbs)	44	44	/ 44	40.64	44
Length (stowed) (ins)	36	36	/ 36	36	36
Diameter (stowed) (ins)	5.5	5.5	/ 5.5	5.5	5.5
Reliability (Operational)	.90	.90	/ .86	TBD	.90
Useful Life (yrs)	20	20	/ 10	TBD	20

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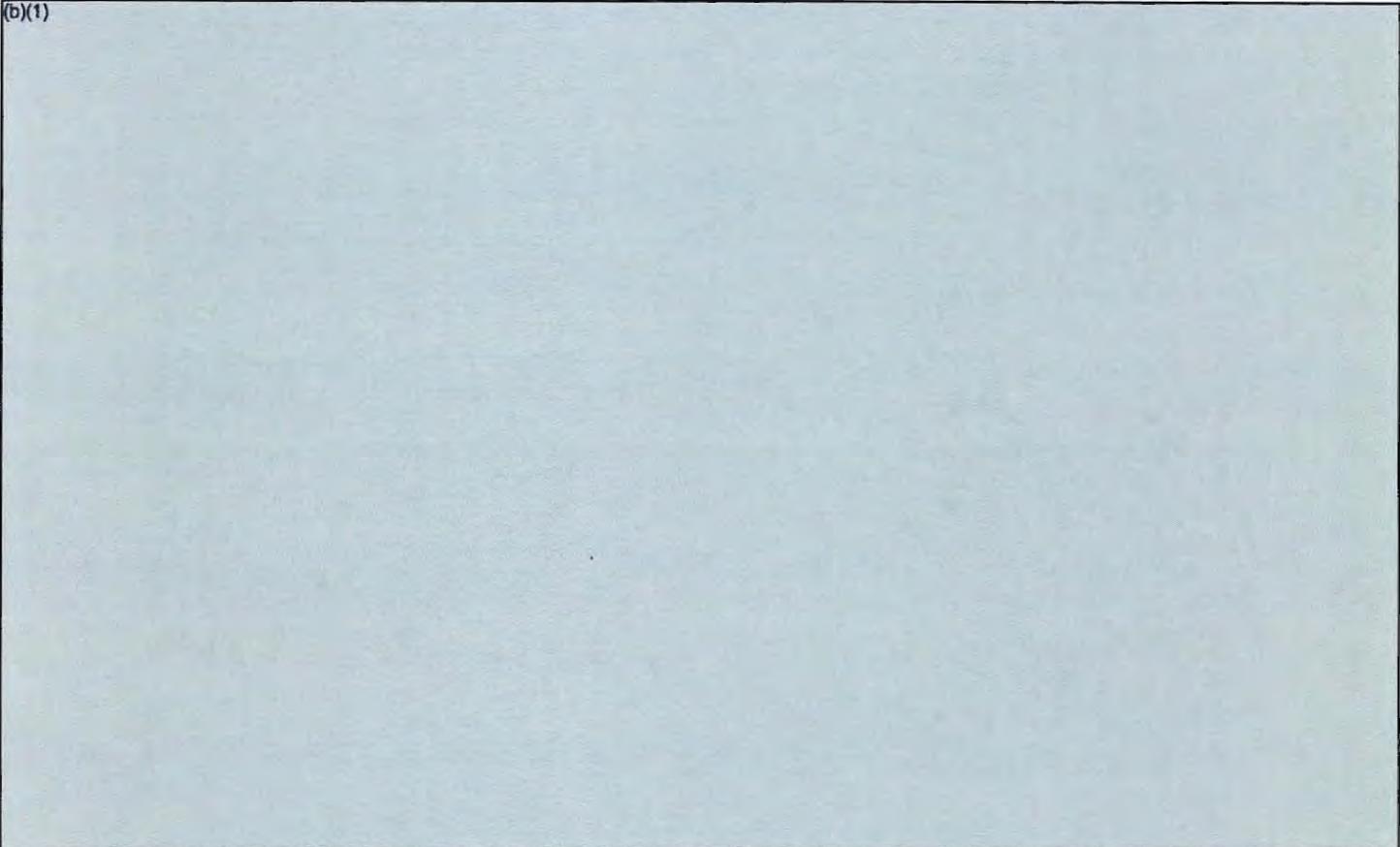
ATACMS/BAT, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

BAT/BAT P3I

<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------	---	------------------------------------	-----------------------------

(b)(1)



b. (U) Previous Change Explanations --

Kills per launcher load in Army TACMS have been changed to correct the current estimate from the Dec 91 SAR to match the development estimate. Range target data was changed to correct the target nomenclature. Additional penetration was changed because of data obtained from EMD test articles. TSSAM is no longer required for the BAT program; the Army TACMS Block II was designated as the delivery vehicle. Army TACMS kills per launcher load was changed because of recent demonstrations on EMD test articles. Lethality performance characteristics were renamed, added, or changed to remove ambiguity about interpreting data. Performance characteristic "Kills/Launcher Load, Large Cruise" is no longer applicable to the BAT program as Army TACMS Block II is the delivery vehicle.

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ATACMS/BAT, December 31, 1995

10b. (U) Performance Characteristics (Cont'd):
BAT/BAT P3I

Performance characteristics for the BAT P3I were added.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:

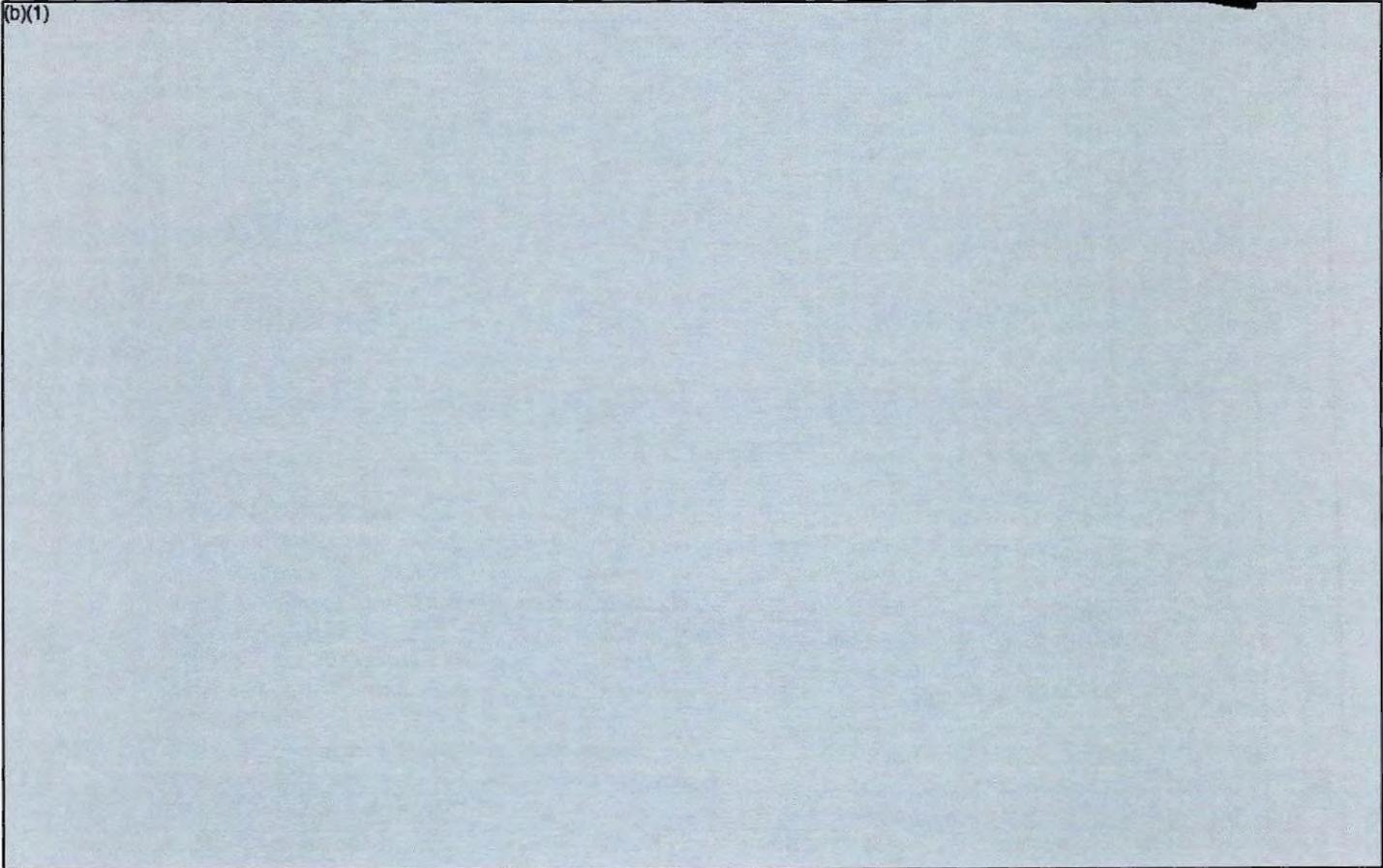
DAE Approved Acquisition Program Baseline dated September 22, 1995.

Army TACMS Blk II/Blk IIA

a. (U) Performance --		Approved Program	Demon- strated	Current
	<u>DE</u>	<u>Objective/Threshold</u>	<u>Perf</u>	<u>Estimate</u>

BLOCK II ATACMS

(b)(1)



ATACMS/BAT, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
Army TACMS Blk II/Blk IIA

DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Payload (No. BAT P3I Submunitions) 6	6 P3I BAT / 6 P3I BAT	TBD	6
(b)(1)			

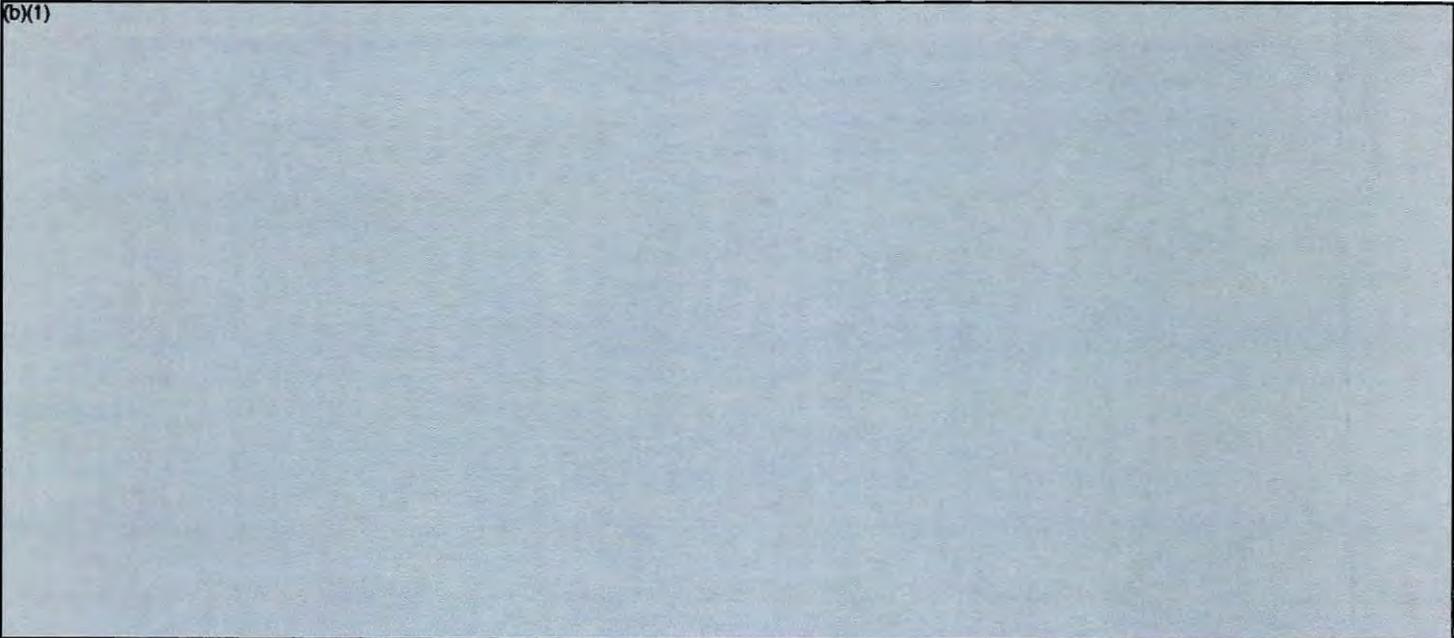
b. (U) Previous Change Explanations --

Performance characteristic "Accuracy, w/o GPS (Meters from min range to 107 km)" changed to reflect expected inertial accuracy.

c. (U) Current Change Explanations --

(b)(1)

(b)(1)



(U) Development Estimate:

AAE Acquisition Acquisition Decision Memorandum (ADM), 15 May 95.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated September 22, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

BAT/BAT P3I

	<u>Development</u>	<u>Approved</u>	<u>Current</u>
a. (U) Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	702.1	1164.9	1164.4
Procurement	1569.9	1319.3	1331.1
Flyaway	(1553.6)		(1319.7)
Other Wpn Sys Costs	(16.3)		(11.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	2272.0	2484.2	2495.5
Escalation	714.6	712.3	546.6
Development (RDT&E)	(29.5)	(118.0)	(99.0)
Procurement	(685.1)	(594.3)	(447.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2986.6	3196.5	3042.1

ATACMS/BAT, December 31, 1995

11b. (U) Total Program Cost and Quantity (Cont'd):
BAT/BAT P3I

	Development	Approved	Current
b. (U) Quantity --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	0	0	0
Procurement	<u>30993</u>	<u>19902</u>	<u>19902</u>
Total	30993	19902	19902

BAT/BAT P3I unit of measure is a submunition.

The BAT Milestone II decision (Acquisition Decision Memo, 15 May 91) provided for an LRIP quantity of 3650 submunitions which exceeds the 10% guideline established in 10 U.S.C. 2400 (FASTA). The current LRIP quantity is 2756 which also exceeds the 10% guideline. The 2756 units are to be procured in three LRIPs whereas the originally planned 3650 units were to be procured in two LRIPs. The three LRIPs are required to: 1) provide operational test assets, 2) provide a reasonable ramp to production rate, 3) support Army TACMS Block II production requirements, and 4) maintain the BAT vendor base through continuous manufacturing. The first full rate production contract cannot be awarded until FY01 because Milestone III, which is constrained to the completion of Army TACMS Block II system operational testing and live fire testing, will not occur until Sep 00.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Acquisition Decision Memorandum (ADM), dated 15 May 1991, approval to enter Engineering and Manufacturing Development (EMD).

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated September 22, 1995.

ATACMS/BAT, December 31, 1995

11a. (U) Total Program Cost and Quantity (Cont'd):
 Army TACMS Blk II/Blk IIA

	Development	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	385.4	382.3	384.4
Procurement	1210.3	1081.8	1085.5
Recurring Flyaway	(1092.3)		(985.2)
Nonrecurring Flyaway	(89.6)		(71.7)
Total Flyaway	(1181.9)		(1056.9)
Other Wpn Sys Costs	(22.0)		(22.0)
Peculiar Support	(3.6)		(3.8)
Initial Spares	(2.8)		(2.8)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	1595.7	1464.1	1469.9
Escalation	705.4	640.7	480.9
Development (RDT&E)	(103.1)	(97.1)	(78.1)
Procurement	(602.3)	(543.6)	(402.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Than-Year \$	2301.1	2104.8	1950.8
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1806</u>	<u>1806</u>	<u>1806</u>
Total	1806	1806	1806

ATACMS Block II/IIA unit of measure is a missile.

The total of Block II's LRIP I and LRIP II quantities (150 missiles) marginally exceeds the generic guidance contained in 10 U.S.C. 2400 (FASTA). The total LRIP quantities were logically selected to preserve the BAT production base and provide a logical ramp of both BAT and Block II production. Since the BAT and Block II programs are highly integrated, a 10% quantity change would cost the combined program over \$32M.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

AAE Approved Acquisition Decision Memorandum (ADM), 15 May 95.

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ATACMS/BAT, December 31, 1995

11e. (U) Total Program Cost and Quantity (Cont'd):

Army TACMS Blk II/Blk IIA

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated September 22, 1995.

12. (U) Unit Cost Summary:

BAT/BAT P3I

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	2495.5	2484.2	
(2) Quantity	19902	19902	
(3) Unit Cost	0.125	0.125	0.45
b. (U) Procurement			
(1) Cost (BY91\$)	1331.1	1319.3	
(2) Quantity	19902	19902	
(3) Unit Cost	0.067	0.066	0.89

Army TACMS Blk II/Blk IIA

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY91\$)	1469.9	1464.1	
(2) Quantity	1806	1806	
(3) Unit Cost	0.814	0.811	0.40
b. (U) Procurement			
(1) Cost (BY91\$)	1085.5	1081.8	
(2) Quantity	1806	1806	
(3) Unit Cost	0.601	0.599	0.34

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ATACMS/BAT, December 31, 1995

13. (U) Cost Variance Analysis:
Summary - All end items

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	1220.1	4067.6	0.0	5287.7
Previous Changes:				
Economic	-0.9	-53.6	-	-54.5
Quantity	-	-699.4	-	-699.4
Schedule	+3.6	+165.6	-	+169.2
Engineering	+280.4	+60.1	-	+340.5
Estimating	+259.1	+3.5	-	+262.6
Other	-	-	-	-
Support	-	-4.9	-	-4.9
Subtotal	+542.2	-528.7	-	+13.5
Current Changes:				
Economic	-47.5	-	-	-47.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-47.5	-	-	-47.5
Total Changes	+494.7	-528.7	-	-34.0
Current Estimate	1714.8	3538.9	-	5253.7

ATACMS/BAT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

Summary - All end items

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Estimate	1087.5	2780.2	0.0	3867.7
Previous Changes:				
Quantity	-	-417.1	-	-417.1
Schedule	-	-0.3	-	-0.3
Engineering	+237.3	+39.3	-	+276.6
Estimating	+216.2	+3.6	-	+219.8
Other	-	-	-	-
Support	-	-4.7	-	-4.7
Subtotal	+453.5	-379.2	-	+74.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	+453.5	-379.2	-	+74.3
Current Estimate	1541.0	2401.0	-	3942.0

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ATACMS/BAT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	731.6	2255.0	0.0	2986.6
Previous Changes:				
Economic	-0.9	-53.6	-	-54.5
Quantity	-	-699.4	-	-699.4
Schedule	+3.6	+165.6	-	+169.2
Engineering	+280.4	+60.1	-	+340.5
Estimating	+268.2	+190.7	-	+458.9
Other	-	-	-	-
Support	-	-4.9	-	-4.9
Subtotal	+551.3	-341.5	-	+209.8
Current Changes:				
Economic	-26.0	-	-	-26.0
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-26.0	-	-	-26.0
Total Changes	+525.3	-341.5	-	+183.8
Current Estimate	1256.9	1913.5	-	3170.4

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ATACMS/BAT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	702.1	1569.9	0.0	2272.0
Previous Changes:				
Quantity	-	-417.1	-	-417.1
Schedule	-	-0.3	-	-0.3
Engineering	+237.3	+39.3	-	+276.6
Estimating	+220.6	+132.1	-	+352.7
Other	-	-	-	-
Support	-	-4.7	-	-4.7
Subtotal	+457.9	-250.7	-	+207.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	+457.9	-250.7	-	+207.2
Current Estimate	1160.0	1319.2	-	2479.2

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Adjustment for negative program change.

Schedule: Rephased development effort for FY 92-96.

Engineering: Increased scope due to restructure and addition of BAT P3I EMD. Refinement of BAT P3I to reallocate integration cost for the carrier.

Estimating: Adjustment for current and prior inflation. Additional development costs for hardware integration for the Army TACMS versus the TSSAM BAT carrier. Revised estimate for hardware integration. Additional costs for feasibility

ATACMS/BAT, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

BAT/BAT P3I

studies and hardware tests. Addition of 1 year to incorporate Army TACMS Block II. Decrease for budget adjustments in FY 96-02 to align with Army cost reduction excursion.

Procurement

- Economic:** Revised escalation indices. Adjustment for negative program change.
- Quantity:** Decrease of 12839 units from 30993 to 18154. Recategorizing quantity and estimating in Dec 92 SAR. Increase of 2066 units from 18154 to 20220. Increase quantity from 20220 to 20226. Decrease quantity from 20226 to 19902.
- Schedule:** Revised schedule of submunition procurement from FY 95-96 to FY 03-06. A 1 year delay in start of production from FY 94 to FY 95. Change in the procurement buy schedule. Change in annual buy quantities from FY 00-06.
- Engineering:** Refined production cost estimate to incorporate BAT P3I into the BAT terminal seeker. Engineering allocation resulting from decrease of 324 units.
- Estimating:** Adjustment for current and prior year inflation. Allocation associated with quantity reduction. Changed learning curve assumption based on quantity reduction. Allocation associated with quantity increase. Refined cost based on efficiency in rate of procurement of a larger annual buy quantity for FY 98-01. Reduction of estimate for closeout costs from FY 06 to FY 05. Increase costs for learning curve inefficiencies and fixed costs. Estimating allocation resulting from decrease of 324 units. Estimate revised which incorporated Phase I Cost Reduction Plan for Program Management and Production Support.
- Support:** Change in projected engineering data costs. Decrease in support based on reduction of 12839 units. Increase in support based on quantity increase of 2066 units. Decrease for data and first destination transportation requirements. Decrease in support based on reduction of 324 units.

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13c. (U) Cost Variance Analysis (Cont'd):
BAT/BAT P3I

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised estimate to reflect projected reduced testing costs. (Estimating)	-2.3	-0.9
Revised escalation indices. (Economic)	N/A	-26.0
	<hr/>	<hr/>
RDT&E Subtotal	-2.3	-26.9
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-150.7
Increase in estimate for Production Verification Tests. (Estimating)	+12.1	+16.0
	<hr/>	<hr/>
Procurement Subtotal	+12.1	-134.7

ATACMS/BAT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
 Army TACMS Blk II/Blk IIA

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	488.5	1812.6	0.0	2301.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.1	-187.2	-	-196.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.1	-187.2	-	-196.3
Current Changes:				
Economic	-21.5	-	-	-21.5
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-21.5	-	-	-21.5
Total Changes	-30.6	-187.2	-	-217.8
Current Estimate	457.9	1625.4	-	2083.3

ATACMS/BAT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Army TACMS Blk II/Blk IIA

a. (U) Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	385.4	1210.3	0.0	1595.7
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-4.4	-128.5	-	-132.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-4.4	-128.5	-	-132.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Total Changes	-4.4	-128.5	-	-132.9
Current Estimate	381.0	1081.8	-	1462.8

b. (U) Previous Change Explanations --

RDT&E

Estimating: Revised estimate which incorporates Phase I Cost Reduction Plan for Program Management.

Procurement

Estimating: Revised estimate which incorporates Phase I Cost Reduction Plan for Program Management and Production Support.

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13c. (U) Cost Variance Analysis (Cont'd):
Army TACMS Blk II/Blk IIA

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

BAT/BAT P3I

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.096	-0.012	0.019	0.009	0.017	0.024	--	--	0.057	0.153

Army TACMS Blk II/Blk IIA

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.274	--	-0.085	--	--	-0.109	--	--	-0.194	1.080

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --

(U) BAT EMD:

Northrop-Grumman Corp., Hawthorne, CA
DAAH01-91-C-A017, CPIF/AF
Award: June 5, 1991
Definitized: June 5, 1991

Initial Contract Price
Target Ceiling Qty

\$383.9 N/A 0

Current Contract Price
Target Ceiling Qty
\$546.5 N/A 0

Estimated Price At Completion
Contractor Program Manager
\$546.5 \$549.3

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$1.6	\$-5.9
Cumulative Variances To Date (11/30/95)	\$-4.6	\$-10.0
Net Change	\$-6.2	\$-4.1

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15. (U) Contract Information (Cont'd):

Explanation of Change:

The unfavorable schedule variance is due to delays in the qualification testing, the infrared (IR) seeker component problems, and a leak on the deceleration stabilization subsystem (DSS) finute. The unfavorable cost variance is due to the DSS finute issue, the IR seeker component problems, and an adjustment to G&A rates. The schedule variance is not expected to impact contract completion. The current contract target price increased as a result of the contract restructure being definitized.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>BAT P3I DEM/VAL:</u>					
Northrop-Grumman Corp., Hawthorne, CA					
DAAH01-93-C-A014, CPIF			\$81.8	N/A	0
Award: October 18, 1993					
Definitized: December 21, 1994					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>			
\$81.8	N/A	0	\$81.8	\$81.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.1	\$-0.5	
Cumulative Variances To Date (11/30/95)			<u>\$1.1</u>	<u>\$-2.4</u>	
Net Change			\$1.0	\$-1.9	

Explanation of Change:

The unfavorable schedule variance is driven by the two subcontractors, Alliant Techsystems and Westinghouse. The variance at Alliant reflects the delay in the start of building the spare Millimeter Wave (MMW) Captive Flight Test (CFT) unit. This variance should improve with the delivery of material and test data supporting this build. The variance at Westinghouse is due to a lack of manpower and a delay in receipt of supplier invoices. This variance is expected to recover since additional manpower have been added. The impact of delayed invoices will be alleviated once vendor invoices are received and earned value is taken. The favorable cost variance is primarily due to efficiencies in the prime contractor's program management and lower forward pricing rates.

Phase I awarded in Oct 93 and NTE option for Phase II was awarded Dec 94. Phase II was definitized on 21 Dec 94.

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15. (U) Contract Information (Cont'd):

(U) <u>ATACMS Blk II Cont Dev:</u>			Initial Contract Price		
Loral Vought Sys (LVS), Dallas, TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAH01-95-C-0001, CPIF			\$155.2	\$0.0	0
Award: July 12, 1995					
Definitized: July 12, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$155.2	\$0.0	0	\$155.2	\$155.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (11/30/95)			N/A	N/A	
Net Change			\$0.2	\$-0.5	
			\$0.2	\$-0.5	

Explanation of Change:

The unfavorable schedule variance is due to lack of adequate staffing for electronic design and systems engineering, the result of a delay in the receipt of a preliminary design for the skin severance system from the subcontractor, and a delay in the pyroshock testing due to the failure of the submunition contractor to deliver a test submunition. The favorable cost variance comes from lower costs for computers and travel than anticipated as a result of the slow buildup of engineering personnel for electronic design and systems engineering.

This is the first time this contract has appeared in the SAR.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 52.0% (13 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 19.0% (\$946.7 / \$4992.9)

BAT/BAT P3I

- (1) Percent Program Completed: 54.2% (13 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 28.8% (\$874.8 / \$3042.1)

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Army TACMS Blk II/Blk IIA

(1) Percent Program Completed: 14.3% (2 yrs/14 yrs)

(2) Percent Program Cost Appropriated: 3.7% (\$71.9 / \$1950.8)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Total Program</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY84-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2008)	<u>Total</u>
RDT&E	752.2	194.5	180.4	598.8	1725.9
Procurement	-	-	-	3267.0	3267.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	752.2	194.5	180.4	3865.8	4992.9

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>BAT/BAT P3I</u> <u>Appropriation</u>	<u>Prior</u> <u>Years</u> (FY84-95)	<u>Budget</u> <u>Year</u> (FY96)	<u>Budget</u> <u>Year</u> (FY97)	<u>Balance To</u> <u>Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	742.4	132.4	102.8	285.8	1263.4
Procurement	-	-	-	1778.7	1778.7
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	742.4	132.4	102.8	2064.5	3042.1

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16b. (U) Program Funding Summary (Cont'd):
 Army TACMS Blk II/Blk IIA

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Army TACMS Blk II/Blk IIA	Prior	Budget	Budget	Balance To	
<u>Appropriation</u>	<u>Years</u>	<u>Year</u>	<u>Year</u>	<u>Complete</u>	<u>Total</u>
	(FY95)	(FY96)	(FY97)	(FY98-2008)	
RDT&E	9.8	62.1	77.6	313.0	462.5
Procurement	-	-	-	1488.3	1488.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	9.8	62.1	77.6	1801.3	1950.8

c. (U) Annual Summary -- BAT/BAT P3I

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Obligated Program	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1984				5.2	4.2	4.2	4.2	3.8
1985				18.4	15.2	15.2	15.2	3.4
1986				37.8	32.2	32.2	32.2	2.8
1987				34.2	30.0	30.0	30.0	2.7
1988				45.9	41.9	41.9	41.9	3.0
1989				46.3	44.0	44.0	44.0	4.2
1990				40.7	40.1	40.1	40.1	4.1
1991				70.2	71.9	71.9	71.9	4.3

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16c. (U) Program Funding Summary (Cont'd):
 BAT/BAT P3I

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1992				115.6	121.1	121.1	121.1	3.0
1993				106.8	114.5	114.5	114.4	2.4
1994				111.5	121.9	121.9	120.0	2.0
1995				94.5	105.4	105.2	102.0	1.9
1996				116.2	132.4	110.5	30.4	2.0
1997				88.3	102.8			2.2
1998				75.4	89.8			2.2
1999				53.5	65.2			2.3
2000				60.8	75.7			2.2
2001				29.3	37.2			2.2
2002				13.8	17.9			2.2
Subtot				1164.4	1263.4	852.7	767.4	

Expenditures and obligations as of 4 Mar 96.

Appropriation: 2032 Missile Procurement, Army

1998	547	22.6	75.9	99.9	120.9			2.2
1999	576	12.2	69.7	83.1	102.8			2.3
2000	1633		139.8	142.9	180.7			2.2

ATACMS/BAT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
BAT/BAT P3I

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2001	2040	7.5	153.4	163.5	211.2			2.2
2002	2200		151.9	153.4	202.5			2.2
2003	3000		176.9	177.3	239.3			2.2
2004	3000		163.9	164.3	226.6			2.2
2005	3000		155.7	156.1	220.0			2.2
2006	3906		190.2	183.9	264.9			2.2
2007				6.7	9.8			2.2
Subtot	19902	42.3	1277.4	1331.1	1778.7			
Grand Total	19902	42.3	1277.4	2495.5	3042.1	852.7	767.4	

c. (U) Annual Summary -- Army TACMS Blk II/Blk IIA

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1995				8.8	9.8	9.7	9.2	1.9
1996				54.5	62.1	46.1	2.0	2.0

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ATACMS/BAT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
 Army TACMS Blk II/Blk IIA

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Years	Total Then-Year \$			Escl Rate (\$)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1997				66.6	77.6			2.2
1998				73.8	87.9			2.2
1999				59.4	72.3			2.3
2000				62.1	77.3			2.2
2001				49.8	63.3			2.2
2002				9.4	12.2			2.2
Subtot				384.4	462.5	55.8	11.2	

Appropriation: 2032 Missile Procurement, Army

1999	50	13.9	31.3	49.6	61.3			2.3
2000	100	3.3	58.8	65.3	82.6			2.2
2001	150	3.5	93.2	98.1	126.8			2.2
2002	150	15.4	75.9	95.9	126.6			2.2
2003	300	7.5	158.1	170.4	230.0			2.2
2004	300	7.6	160.5	170.9	235.7			2.2
2005	300	7.4	159.3	169.6	239.1			2.2
2006	300	6.6	157.4	167.0	240.6			2.2
2007	156	3.3	90.7	89.5	131.7			2.2

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ATACMS/BAT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
 Army TACMS Blk II/Blk IIA

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Recl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2032 Missile Procurement, Army (Cont'd)

2008		3.2		9.2	13.9			2.2
Subtot	1806	71.7	985.2	1085.5	1488.3			
Grand Total	1806	71.7	985.2	1469.9	1950.8	55.8	11.2	

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

There was no Design-to-Cost objective established at the Milestone II review. The BAT Acquisition Decision Memorandum, dated 15 May 91, established a Design to Unit Production Cost (DTUPC) of less than or equal to \$55K (FY 91 \$, based upon production quantity of 30993) as exit criteria for Low Rate Initial Production.

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

Design to Cost (DTC) Requirements waived, Memo, SARD-SM, 2 Nov 94, Subject: Request for Waiver of DTC Requirements - Army Tactical Missile System (ATACMS), Block II.

18. (U) Operating and Support Costs:
 BAT/BAT P3I

ATACMS/BAT, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):
BAT/BAT P3I

a. (U) Assumptions and Ground Rules --

The BAT Submunition will be furnished to the delivery vehicle contractor as GFE. The submunition is considered a certified round; therefore, O&S cost will be minimal. It will consist of stockpile reliability test for recertification, minimal depot maintenance, military personnel for Explosive Ordnance Disposal (EOD) and system project management. Based on the Level of Repair Analysis (LORA) and the associated Economic Analysis, contractor logistic support (CLS) is planned for the BAT. O&S costs will further solidify with the accelerated aging tests and stockpile reliability flight tests in FY96. There is no antecedent system.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per BAT System	Avg Annual Cost Per Antecedent
DEP MAINTENANCE (28 YRS)	1.4	N/A
MILPERS (15 YRS)	0.6	N/A
STKPILE REL TST (20 YRS)	0.9	N/A
SOFTWARE (20 YRS)	0.7	N/A
Total	3.6	N/A

O&S Cost as of 31 Dec 95.

Contractor support costs are included in depot maintenance costs.

Average Annual Cost Per BAT System reflects average annual cost for total BAT quantity (19902).

c. (U) Contractor Support Costs -- None.

Army TACMS Blk II/Blk IIA

a. (U) Assumptions and Ground Rules --

Army TACMS Block II will be fired from the modified Multiple Launch Rocket System (MLRS) M270 launcher within the MLRS organizational

ATACMS/BAT, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

Army TACMS Blk II/Blk IIA

units. Manning/crew support is provided by the MLRS organizational unit. Army TACMS Block II will be a certified round. Maintenance will be determined on the basis of a Stockpile Reliability Program (SRP). There is no antecedent system.

b. (U) Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Army TACMS Block II	Avg Annual Cost Per
Dep Maintenance (26 Yrs)	1.0	N/A
MILPERS (34 Yrs)	0.2	N/A
Software (20 Yrs)	1.7	N/A
Sys/Proj Mgt (20 Yrs)	0.6	N/A
Sys Test & Eval (20 Yrs)	3.9	N/A
Total	7.4	N/A

O&S Cost as of 31 Dec 95.

Average Annual Cost Per Army TACMS Block II reflects average annual cost for total Army TACMS Block II quantity (1206).

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: F/A-18 E/F

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
F/A-18 E/F Naval Strike Fighter (HORNET)

2. DoD Component: Navy

3. Responsible Office and Telephone Number:
F/A-18 Program Office CAPT JOE DYER
Tactical Aircraft Program Assigned: January 14, 1994
Washington, DC 20361-1265 AV 664-2210 x7431
COMM (703) 604-2210 x7431

4. Program Elements/Procurement Line Items:

RDT&E:
PE 0204136N
PROCUREMENT:
APPN 1506 ICN 014500 (Navy)
APPN 1506 ICN 060510 (Navy)

5. Related Programs:
F/A-18 C/D

6. Mission and Description:
The F/A-18 E/F will be the second major model upgrade since F/A-18 aircraft program inception. The F/A-18 E (single seat) and the F/A-18 F (two seat) will be a high performance twin engine, mid-wing, multi-mission tactical aircraft designed to replace F/A-18 C (single seat), F/A-18 D (two seat), A-6, and F-14 aircraft as they reach the

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F/A-18 E/F, December 31, 1995

6. Mission and Description (Cont'd):

end of service life and retire. The F/A-18 E/F will be designed primarily to meet current Navy and Marine Corps fighter escort, interdiction, fleet air defense and close air support mission requirements. Enhancements will include the increased range, improved survivability, and improved carrier suitability required for the F/A-18 to continue its key strike fighter role against the advanced threat of the late 1990's and beyond.

7. Program Highlights:

a. Significant Historical Developments --

In July 1987, the Secretary Of Defense issued a memorandum to the Secretaries of the Navy and the Air Force directing them to begin studying advanced versions of the F/A-18 and F-16 aircraft. In response, the Assistant Chief of Naval Operations for Air Warfare initiated an upgrade study to evaluate various F/A-18 alternatives for the year 2000 and beyond. The trade studies for the Hornet 2000 evaluated seven configuration options for operational performance, costs and technical feasibility. The results of these studies, refined by risk reduction work during FY-91, have been incorporated into the recommended configuration for the F/A-18 E/F.

The F/A-18 E/F program was reviewed by the Defense Acquisition Board (DAB) for Milestone IV/II approval in May 1992. The DAB approved the program to enter Engineering and Manufacturing Development (E&MD) in the Acquisition Decision Memorandum (ADM) on 12 May 1992. The E&MD contract was awarded July 1992. The E&MD engine and airframe contracts were definitized on 07 December 1992. The Test and Evaluation Master Plan for the F/A-18 E/F was approved 5 May 1992. Update has been approved by the Director of Developmental Test & Evaluation and is awaiting signature by the Director of Operational Test & Evaluation. Full approval is anticipated in March 1996.

The F/A-18 E/F E&MD program successfully completed an Engine Preliminary Design Review in October 1992 and an Airframe Initial Design Review in September of 1992. An Integrated Management Information Control System (IMICS) has been implemented which allows the program office to monitor the contractors' schedule and cost process, and risk management. Also implemented was the cost/schedule control system which also monitors the contractors' cost and schedule progress and shows any changes or variances.

The F414 engine incorporates the basic design of the F412 core, which was partially developed under the A-12 Program. The testing under the A-12 program reduces risk considerably for F414 core development. Component rig testing of the afterburner (A/B) permitted early identification of design changes that resulted in improved A/B maintainability and durability while retaining overall A/B

F/A-18 E/F, December 31, 1995

7a. Program Highlights (Cont'd):

performance levels. Low pressure turbine and combustor rig tests in the last quarter of the year also produced better than expected performance. This had been considered a difficult challenge area. A/B altitude testing began in November 1992 with the first full engine to test on May 1993. Exploratory altitude testing began on November 1993.

Due to a \$190M FY93 Congressional Funding reduction, First Flight date for F/A-18E number 1 was adjusted to 31 December 1995.

Successfully completed First Engine to Test in May 93 and Airframe Preliminary Design Review in June 93.

The first four test engines had accumulated a total of 550 hours as of 31 December 1993, with no major problems.

The Department of Defense Bottom Up review completed in September 1993 recommended proceeding with the F/A-18 E/F development with an Initial Operational Capability (IOC) of September 2000.

Schedule and cost performance problems with Northrop occurred in August 93. The issue has been addressed and the program is executable within the DAB cost and schedule estimates.

The Airframe and Engine Critical Design reviews have been completed. The E&MD phase is 77.1% complete for the McDonnell Douglas airframe and 82.1% complete for the General Electric engine.

b. Significant Developments Since Last Report --

The F/A-18 E/F entered a new phase of the EMD program with the flight of the first aircraft (F/A-18E number 1) in November 1995. The event occurred 2 days prior to the previous current estimate and 32 days ahead of the contractually required date. This was followed shortly by the flight of the second aircraft (F/A-18E number 2) in December 1995. Initial flights at St. Louis included missions dedicated to the Early Operational Assessment (EOA) which is required prior to release of production funds.

The Preliminary Flight Qualification (PFQ) was successfully completed on 29 September 1995 with over 5,400 hours of engine testing completed.

A Program Deviation Report was submitted in December 1995 to request a baseline change. The request was necessitated by a baseline breach in the date for OT-IIA. This breach was accompanied by delays to various developmental and operational test dates. These changes were a consequence of the FY93 \$190M Congressional mark. The commencement

F/A-18 E/F, December 31, 1995

7b. Program Highlights (Cont'd):

date for OPEVAL was not impacted.

The F/A-18 E/F is expected to meet all mission requirements.

c. Changes Since As Of Date --

The BOA was successfully completed on 26 February 1996 and signed out by the Commander, Operational Test and Evaluation Force (COMOPTEVFOR). The F/A-18 E/F was found to be potentially effective and suitable, with appropriate program management being applied.

In February 1996, the first and second aircraft (F/A-18E number 1 and number 2) were flown to the principle test site at the Naval Air Warfare Center-Aircraft Division in Patuxent River, MD. The aircrafts were accepted by the Integrated Test Team and the three year integrated test program was started.

The Program Deviation Report requesting a program baseline change was approved in February 1996.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline dated February 15, 1996. There are no Numm McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/II	MAR 92	MAR 92	MAY 92
First Engine to Test	APR 93	APR 93	MAY 93
Preliminary Design Review (Airframe)	APR 93	APR 93	JUN 93
Critical Design Review (Airframe)	JAN 94	JAN 94	JUL 94
Production Readiness Review (Airframe)	APR 95	APR 95	AUG 95(Ch-1)
Preliminary Flight Qualification (Engine)	MAR 95	MAR 95	SEP 95(Ch-2)
First Flight	OCT 95	OCT 95	NOV 95(Ch-3)
Long Lead Release for LRIP	DEC 95	DEC 95	MAR 96
Limited Production Qualification (Engine)	OCT 96	OCT 96	JAN 97(Ch-2)
LRIP Contract Award	JAN 97	JAN 97	MAR 97
Full Production Qualification (Engine)	OCT 97	OCT 97	OCT 97
LRIP First Delivery	DEC 98	DEC 98	JAN 99
Milestone III	JAN 00	JAN 00	MAR 00
Full Rate Production Contract Award	JAN 00	JAN 00	MAR 00

F/A-18 E/F, December 31, 1995

9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
DT&E			
DT-IIA	OCT 95	OCT 95	NOV 95
DT-IIB	NOV 96	NOV 96	DEC 96 (Ch-4)
DT-IIC	NOV 97	NOV 97	DEC 97 (Ch-4)
DT-IID	JUL 98	JUL 98	NOV 98 (Ch-4)
DT-IIE	OCT 98	OCT 98	DEC 98 (Ch-4)
IOT&E			
OT-IIA	MAR 97	NOV 97	NOV 97 (Ch-4)
OT-IIB	DEC 97	DEC 97	MAR 98 (Ch-4)
OT-IIC	MAR 99	MAR 99	MAY 99
FOT&E			
DT-III	FEB 00	FEB 00	FEB 00
OT-III	FEB 00	FEB 00	FEB 00
O-Level Maintenance Capability (OPEVAL)	MAR 99	MAR 99	MAY 99 (Ch-4)
IOC	SEP 00	SEP 00	SEP 00
I-Level Maintenance Capability			
WRA TPS and Modified TPSs (IOC)	SEP 00	SEP 00	SEP 00
New SRA TPS (IOC + one year)	SEP 01	SEP 01	SEP 01
Material Support Date	OCT 02	OCT 02	APR 03
Navy Support Date	OCT 03	OCT 03	DEC 03
D-Level Maintenance Capability	OCT 03	OCT 03	DEC 03

b. Previous Change Explanations --

The program schedule was updated to reflect the Amended FY 1993 President's Budget, dated January 1992. Milestone II/IV review rescheduled from March 92 to May 92 to meet DAB schedule. Preliminary Flight Qualification (Engine), Milestone III and Full Rate Production Contract Award updated to reflect program schedule as approved by DAB. Current milestone estimates were updated to reflect the impact of the Congressional funding reduction of \$190M in FY93.

The Critical Design Review (Airframe) was rescheduled from May 94 to June 94. The Material Support Date was updated from October 02 to April 03. The Navy Support Date and D-Level Maintenance Capability have been rescheduled from October 03 to December 03. These milestone dates have been updated to reflect current program schedule.

The Critical Design Review (Airframe) was rescheduled from June 94 to July 94. Successful completion of the GDR was accomplished in July 94. The Preliminary Flight Qualification (Engine) was updated from

9b. Schedule (Cont'd):

March 95 to June 95. These milestone dates have been updated to reflect current program schedule.

c. Current Change Explanations --

(Ch-1): Production Readiness Review occurred one month prior to schedule.

(Ch-2): Preliminary Flight Qualification (Engine) and Limited Production Qualification rescheduled due to delays in engine testing.

(Ch-3): First Flight occurred 2 days prior to the previous current estimate and one month ahead of the contractually required date.

(Ch-4): The \$190 million Congressional mark in FY93 resulted in delays to the schedules of Development Testing & Evaluation, Operational Testing and Evaluation, and O-Level Maintenance Capability. These delays have been accommodated in the overall test schedule and have no effect on the commencement of OPEVAL.

d. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated February 15, 1996.

10. Performance Characteristics:

a. Performance --

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Deck Spot Factor (F/A-18A/B/C/D -1.2)	1.4	1.4 / <1.5	TBD	<1.5
Fighter Escort Radius (internal fuel) (Nm)	425	425 / 410	TBD	425
Interdiction Mission Radius (Nm)				
2 external tanks (retained)	400	400 / 390	TBD	400
3 external tanks (retained)	450	450 / 430	TBD	450
Combat Ceiling (max thrust) (ft)	>50000	>50000 / 50000	TBD	>50000
Carrier Suitability (Tropical Day Conditions)				

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10a. Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Launch: Catapult WOD (C-13 Catapult:TCGW) (kts)	25	25 / <30	TBD	<30
Recovery: WOD (MK-7 MOD 3) (kts)	10	10 / <15	TBD	<15
Approach Speed (kts)	140	140 / <150	TBD	<150
Recovery Payload (lbs)	9000	9000 / 9000	TBD	9,000
Usable Load Factor (Subsonic; Nz) (G's)	+7.5	+7.5 / +7.5	TBD	+7.5
Specific Excess Power (Max Thrust, .9M, 1G, 10kft) (fps)	650	650 / >600	TBD	>600
Acceleration (.8M to 1.2M at 35kft) (sec)	60	60 / <70	TBD	<70
Mean Flight Hours Between Maintenance Actions	0.6	0.6 / 0.5	TBD	0.5
Mean Flight Hours Between Failures 1/ Maintenance Hours per flight hour (O&I-Level Unsched)	2.0	2.0 / 1.7	TBD	1.7
Built-In Test (All Avionics) 1/ Fault Detection (%)	12.0	12.0 / 15.0	TBD	15.0
Fault Isolation (%)	75	75 / 65	TBD	65
False Alarm Rate (%)	90	90 / 85	TBD	85
Speed (Mach)	30	30 / 45	TBD	45*
Fighter Escort Mission Configuration @10,000 ft with Intermediate Rated Thrust	.98	.98 / .96	TBD	.96
Empty Weight (lbs)	29950	29950 / 31950	TBD	30564

Note: Interdiction Mission Radius (NM) payload with:
 2 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN
 3 external tanks: 2 AIM-9 + 4 MARK 83 LD + FLIR/TIN and Low Drag
 Pylons

* Under study to establish common definition for hardware/software
 BIT False Indication Rate.

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10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

Fighter Escort Radius, Interdiction Mission Radius and Empty Weight (lbs) have been revised.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Operational Requirements Document dated December 19, 1991.

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated February 15, 1996.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	4883.3	4883.3	4672.6
Procurement	49076.3	49076.3	50015.0
Recurring Flyaway	(36450.2)		(37250.7)
Non-Recurring	(368.1)		(373.4)
Ancillary	(3858.5)		(4013.2)
Total Flyaway	(40676.8)		(41637.3)
Peculiar Support	(4301.9)		(4441.1)
Initial Spares	(4097.6)		(3936.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	53959.6	53959.6	54687.6
 Escalation	 40623.4	 40623.4	 26271.1
Development (RDT&E)	(949.3)	(949.3)	(730.8)
Procurement	(39674.1)	(39674.1)	(25540.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	94583.0	94583.0	80958.7

Pre-development funding of \$44.1 in FY90 Base Year \$'s is reflected in the Development (RDT&E) current estimate. The \$44.1M (BY\$) was not a part of the E&M estimate and is not to be included in the approved \$4.883B development cap.

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11b. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	1000	1000	1000
Total	1000	1000	1000

Note: Excludes 7 RDT&E prototypes from the Current Estimate that are not considered fully configured.

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- N/A
- e. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated 11 June 1992.

Approved Program:

DAE Approved Acquisition Program Baseline dated February 15, 1996.

12. Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (FEB 96 APB)	Percent Change
a. Total Program			
(1) Cost (BY90\$)	54687.6	53959.6	
(2) Quantity	1000	1000	
(3) Unit Cost	54.688	53.960	1.35
b. Procurement			
(1) Cost (BY90\$)	50015.0	49076.3	
(2) Quantity	1000	1000	
(3) Unit Cost	50.015	49.076	1.91

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	5832.6	88750.4	0.0	94583.0
Previous Changes:				
Economic	-75.3	-4917.6	-	-4992.9
Quantity	-	-	-	-
Schedule	+104.5	-927.4	-	-822.9
Engineering	-	+432.4	-	+432.4
Estimating	-58.6	-57.5	-	-116.1
Other	-	-	-	-
Support	-	+71.0	-	+71.0
Subtotal	-29.4	-5399.1	-	-5428.5
Current Changes:				
Economic	-106.1	-8751.7	-	-8857.8
Quantity	-	-	-	-
Schedule	-247.9	-186.0	-	-433.9
Engineering	-	-	-	-
Estimating	-45.8	1060.3	-	+1014.5
Other	-	-	-	-
Support	-	81.4	-	+81.4
Subtotal	-399.8	-7796.0	-	-8195.8
Total Changes	-429.2	-13195.1	-	-13624.3
Current Estimate	5403.4	5555.3	-	80958.7

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	4883.3	49076.3	0.0	53959.6
Previous Changes:				
Quantity	-	-	-	-
Schedule	+18.7	+40.2	-	+58.9
Engineering	-	+262.4	-	+262.4
Estimating	-34.2	+2.0	-	-32.2
Other	-	-	-	-
Support	-	-60.9	-	-60.9
Subtotal	-15.5	+243.7	-	+228.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-172.3	-10.3	-	-182.6
Engineering	-	-	-	-
Estimating	-22.9	666.2	-	+643.3
Other	-	-	-	-
Support	-	39.1	-	+39.1
Subtotal	-195.2	+695.0	-	+499.8
Total Changes	-210.7	+938.7	-	+728.0
Current Estimate	4672.6	50015.0	-	54687.6

b. Previous Change Explanations --

RDT&E

- Economic: Revised escalation indices. Economic adjustment for negative program change.
- Schedule: Revised flight test and aircraft delivery schedule. Revised schedule due to realignment of program funds.
- Estimating: Pre-development effort previously funded under the F/A-18 G/D program. Adjustment for current & prior inflation. Revisions due to the FY95 Congressional reduction (-\$70M) and other miscellaneous marks including Small Business Innovative Research (SBIR) program.

F/A-18 E/F, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Procurement

- Economic:** Revised escalation indices. Economic adjustment for negative program change.
- Schedule:** Aircraft procurement accelerated, quantities procured in FY98-99. Change in annual procurement buy profile.
- Engineering:** Addition of Positive Identification System and ATARS.
- Estimating:** Refinement of a prior current estimate. Change in method used to de-escalate advanced procurement funds. Adjusted to reflect ancillary variance being moved from below Total Flyaway line (6/92 & 12/92 SAR) to above the Total Flyaway line (12/93 & 12/94 SAR).
- Support:** Decrease in spares funding. Increase in support funding due to decreases in total flyaway costs. Adjusted to reflect ancillary variance being moved from below Total Flyaway line (6/92 & 12/92 SAR) to above the Total Flyaway line (12/93 & 12/94 SAR).

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-125.7
Economic adjustment for negative program change. (Economic)	N/A	+19.6
Revised schedule due to realignment of program funds. (Schedule)	-172.3	-247.9
Adjustment for Current and Prior Inflation. (Estimating)	+59.4	+76.3
Refinement of a prior current estimate. (Estimating)	-82.3	-122.1
RDT&E Subtotal	<u>-195.2</u>	<u>-399.8</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	--	-8751.7
Increased procurement in FY 2000 by 6 units and took a corresponding decrease in FY 2015. (Schedule)	-10.3	-186.0
Increased due to lower revised escalation rates. (Estimating)	+666.2	+1060.3

F/A-18 E/F, December 31, 1995

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)
	<u>Base-Year</u> <u>Then-Year</u>
Increased due to lower revised escalation rates. (Support)	+39.1 +81.4
 Procurement Subtotal	 <u>+695.0</u> <u>-7796.0</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
94.58	-13.85	--	-1.26	0.43	0.90	--	0.15	-13.63	80.96

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
<u>Airframe E&MD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MCDONNELL DOUGLAS, St. Louis, MO			\$3879.5	\$0.0	0
N00019-92-C-0059, CPAF/IF					
Award: July 20, 1992					
Definitized: December 7, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$4084.3	\$0.0	0	\$3779.4	\$4456.9	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/95)			\$5.7	\$-36.8	
Net Change			\$8.8	\$-39.9	
			\$3.1	\$-3.1	

Explanation of Change:

The cost and schedule variances remained relatively stable during the last year. The prime contractor, MDA, has continued favorable cost variances in the Wing, Development Test, and Project Management, while NGMAD (subcontractor) variances in the Center and Aft Fuselage declined slightly. The contract is 77% complete and the program emphasis is shifting from manufacturing activity to aircraft flight testing. Assembly delays due to parts shortages were the primary cause for the schedule variances. However, significant improvements

F/A-18 E/F, December 31, 1995

15. Contract Information (Cont'd):

have been made in this area over the past eight months.

<u>YF414-GE-404 Engine:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
General Electric Company, Lynn, MA			\$773.8	\$0.0	21
N00019-92-C-0149, CPAF/IF					
Award: July 20, 1992					
Definitized: December 7, 1992					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$773.8	\$0.0	21	\$770.2	\$841.0	
<u>Previous Cumulative Variances</u>			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (12/31/95)			\$-14.2	\$-14.7	
Net Change			\$-32.3	\$-14.4	
			\$-18.1	\$0.3	

Explanation of Change:

Since the last SAR submission the unfavorable cost variance has increased by \$18.1M. Indirect rate impacts account for approximately a quarter of this amount. The majority of the remaining cost variance is associated with various hardware and testing issues. Overall, the schedule position has slightly improved since the last SAR submission.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 24.0% (6 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 6.0% (\$4895.1 / \$80958.7)

F/A-18 E/F, December 31, 1995

16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY91-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2015)</u>	<u>Total</u>
RDT&E	3845.0	820.4	360.5	377.5	5403.4
Procurement	-	229.7	2249.1	73076.5	75555.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	3845.0	1050.1	2609.6	73454.0	80958.7

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY90 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Excl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1991				7.5	8.0	8.0	8.0	4.3
1992				220.6	349.9	349.9	349.9	2.8
1993				54.7	842.8	842.2	815.6	2.7
1994				1225.9	1395.6	1395.6	1312.3	2.0
1995				1075.6	1248.7	1244.6	1172.2	1.9
1996				692.2	820.4	666.0	8.6	2.0
1997				297.6	360.5			2.2
1998				126.8	157.1			2.2
1999				97.3	123.2			2.3

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000				38.6	49.9			2.2
2001				35.8	47.3			2.2
Subtot				4672.6	5403.4	4506.3	3666.6	

Pre-development effort of \$8.0M in FY91 and \$39.9M in FY92, previously reported as a part of the F/A-18 C/D SAR, is reflected in the RDT&E total. This \$47.9M (TY\$) is not included in the \$4.883B Congressionally mandated funding cap.

Appropriation: 1506 Aircraft Procurement, Navy

1996				189.6	229.7			2.0
1997	12	185.1	1346.6	1816.3	2249.1			2.2
1998	24	238.2	1813.8	2328.2	2947.3			2.2
1999	36	185.5	2079.7	2761.2	3573.0			2.3
2000	42	273.7	2114.3	3021.6	3995.8			2.2
2001	48	233.3	2086.0	2702.5	3652.4			2.2
2002	48	200.4	1998.1	3253.0	4493.0			2.2
2003	48	197.1	1895.4	2705.2	3818.7			2.2
2004	48	194.5	1821.5	2582.4	3725.7			2.2
2005	48	192.3	1764.5	2493.0	3675.7			2.2

F/A-18 E/F, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2006	48	273.0	1717.2	2548.3	3840.1			2.2
2007	72	274.3	2422.5	3107.3	4785.3			2.2
2008	72	271.2	2352.0	2990.9	4707.3			2.2
2009	72	268.6	2293.7	2900.0	4664.7			2.2
2010	72	266.3	2242.7	2851.3	4687.2			2.2
2011	72	264.3	2199.8	2791.0	4689.1			2.2
2012	72	262.5	2162.1	2736.1	4697.8			2.2
2013	72	260.8	2128.3	2684.8	4711.3			2.2
2014	72	259.3	2097.9	2505.1	4492.7			2.2
2015	22	86.2	714.6	1047.2	1919.4			2.2
Subtot	1000	4386.6	37250.7	50015.0	75555.3			
Grand Total	1000	4386.6	37250.7	54687.6	80958.7	4506.3	3666.6	

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

F/A-18 E/F, December 31, 1995

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

Current Program: F/A-18E
 Flight hours per aircraft per month: 30
 Number of aircraft per squadron: 12
 Consumption rate, gallons per hour: 1110.0 POL cost, JP-5 per
 gallon FY90\$: \$0.60

Antecedent Program: F/A-18C
 Flight hours per aircraft per month: 33.6
 Number of aircraft per squadron: 12
 Consumption rate, gallons per hour: 1055.7 POL cost, JP-5, per
 gallon, FY90\$: \$0.60

Date of estimate: March 1996
 Source: AIR-4.2 Operating & Support Cost Estimate

b. Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per F/A-18E Squadron 12 A/C Squadron	Avg Annual Cost Per F/A-18C Squadron 12 A/C Squadron
Personnel	6.9	6.8
Consumables	10.9	10.3
Depot Maintenance	2.4	2.2
Sustaining Investment	2.1	1.5
Indirect Cost	0.5	0.4
Total	22.8	21.2

c. Contractor Support Costs -- None.

SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 823)

PROGRAM: Navy EHF SATCOM Prog

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Navy EHF SATCOM Program (NESP) AN/USC-38(V)

2. (U) DoD Component: Navy

3. (U) Responsible Office and Telephone Number:

Space and Naval Warfare Systems	CAPT K.D. Slaght
Command - EHW 176	Assigned: March 11, 1993
2451 Crystal Drive	AV 332-3950 COMM (703) 602-3950
Arlington, VA 22245-5200	

4. (U) Program Elements/Procurement Line Items:

RDTE:

FE 0303109N Project X0728

PROCUREMENT:

- APFN 1810 ICN 33321000 (Navy) (Shared)
- APFN 1810 ICN 33322000 (Navy) (Shared)
- APFN 1810 ICN 33902000 (Navy) (Shared)
- APFN 1611 ICN MULTIPLE (Navy)

AS AMENDED

MAR 27 1995

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~~AS AMENDED~~
at 0 21316
MAR 26 1995
[Signature]
Chief of the Staff of
Naval Operations
Department of the Navy

~~Derived from [unclear] System Classification Guide 07/20/98~~
~~Declassify on: NS~~

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Navy EHF SATCOM Prog, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCON:

PE 0303109N

5. (U) Related Programs:

Milstar Satellite Communications System

6. (U) Mission and Description:

a. (U) The Navy Extremely High Frequency (EHF) Satellite Communications (SATCOM) Program (NESP) AN/USC-38(V) is an anti-jam, low probability of intercept communications terminal designed to accommodate a wide variety of command and control communication applications (i.e., secure voice, teletype, data, and fleet broadcast systems). As the Navy's portion of Milstar, NESP terminals are an essential part of the number one command and control communications system within DOD as identified by the Chief of Naval Operations on 9 Feb 93. The terminal operates within the EHF uplink and Super High Frequency (SHF) downlink radio frequency (RF) spectrums. The terminals are interoperable with Army and Air Force terminals and will operate with Milstar satellites as well as EHF packages on board Ultra High Frequency (UHF) Follow-On (UFO) Satellites 4 - 10 and with the Fleet Satellite (FLTSAT) EHF Packages (FEP) installed on FLTSATs 7 and 8. A medium data rate (MDR) applique is being developed for incorporation into the NESP terminal to allow MDR communications with Milstar II satellites. The NESP terminals will provide vital survivable wartime command and control communications for the National Command Authority, Specified/Unified CINC's, and operational commanders. NESP has three configurations: Submarine (V)1, Ship (V)2, and Shore (V)3. This system does not replace another system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

(U) The terminal was developed to support the requirements of the Mission Elements Needs Statement (MENS), ASN (RE&S) letter of 23 July 1981, and Navy Decision Coordinating Paper (NDCP) of 21 January 1982, updated 25 April 1989. NESP's operational performance will meet the threat defined in the Milstar System Threat Assessment Report (STAR) updated March 1992. After a full and open competition, three companies began system definition and concept demonstration in 1979. Two companies were selected for Full Scale Development (FSD) in 1982; one company was awarded a Firm Fixed Price contract in 1986 for FSD completion and initial production. Low Rate Initial Production (LRIP) beginning in FY 90 was approved at a Milestone IIIA decision in May 1989. Operational Evaluation (OPEVAL) Phase I and OPEVAL Phase II were successfully completed in September 1990 and August 1992, respectively. Navy EHF SATCOM terminals supported Desert Storm operations by providing dedicated

Navy EHF SATCOM Prog, December 31, 1995

7a. (U) Program Highlights (Cont'd):

Pentagon to Riyadh secure, jam-resistant communication links for USCINCENT via an EHF package on board FLTSAT 8. Full Rate Production beginning in FY 93 was approved at a Milestone III decision in April 1993.

(U) The first Milstar satellite was launched on 7 February 1994. A production NESP terminal successfully communicated with an Air Force terminal over the on-orbit Milstar Satellite on 15 February 1994 as part of Milstar System Test (MST)-8000.

(U) NESP achieved Service Depot Support capability in February 1994. Overall Organic Support capability was also accomplished with the achievement of Organic Depot Support capability in February 1994 and the prior achievement of Organic Supply Support in March 1993. NESP Initial Operational Capability (IOC) was achieved in April 1994.

(U) NESP terminals were certified as participants in the Dedicated Asset Test (DAT) portion of the Milstar Initial Operational Test and Evaluation (IOT&E) in August 1994. This test was completed in September 1994 and all DAT performance requirements were successfully achieved by the NESP terminals. NESP terminals were also certified to initiate Follow-On Operational Test and Evaluation (FOT&E) in August 1994. In September 1994 this test was completed with all test objectives successfully achieved.

(U) Operational NESP ship and shore terminals and the Milstar satellite were used to support Operation Restore Democracy in September 1994.

b. (U) Significant Developments Since Last Report —

(U) The Ultra High Frequency (UHF) Follow-On (UFO) Satellites Flights 4, 5, and 6, each equipped with an EHF package, were launched in 1995. All were tested successfully with NESP terminals. With the addition of these satellites, the DOD has achieved worldwide EHF communications coverage.

(U) NESP completed the Milstar Pacific Operational Network Test (ONT) in June 1995. In August 1995, NESP terminals successfully participated in the COMPTIEVFOR-conducted OT-IV of the UFO/E Satellite 4 (EHF portion).

(U) The second Milstar satellite (DFS-2) was launched in November 1995. NESP terminals successfully participated in Milstar System Test (MST) 8000-2. In December 1995, the two on-orbit Milstar Satellites successfully transmitted the first Milstar inter-satellite message via crosslinks. When the Milstar constellation is completed in 2000, this crosslinking capability will provide worldwide ring

Navy EHF SATCOM Prog, December 31, 1995

7b. (U) Program Highlights (Cont'd):

interconnectivity while requiring only one ground station on friendly soil. Crosslinking is a unique Milstar capability in providing worldwide anti-jam connectivity.

(U) Mission Data Updates (MDUs) for Tomahawk shooters are being operationally transmitted over EHF from the Cruise Missile Support Activity, Atlantic (CMSA LANT) via the NESP terminals at Naval Computer and Telecommunications Area Master Station (NCTAMS) LANT and NCTAMS MED. Transmissions of MDUs over EHF are highly successful and have resulted in an over 400% reduction in MDU delivery time when compared to current MDU delivery paths while also providing anti-jam capabilities.

c. (U) Changes Since As Of Date --

(U) CONSDOKHFLEET and the USS Enterprise Battle Group were completely outfitted with an EHF Capability in February 1996. The USS Enterprise Battle Group represents the first Battle Group completely outfitted with EHF capabilities.

8. (U) Threshold Breaches:

(U) There are no breaches to the Acquisition Program Baseline dated March 24, 1993.

(U) There are no Munn-McCurdy Unit Cost breaches to the Acquisition Program Baseline dated March 24, 1993.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
System Definition/Concept Demo (CEB) (3 Contractors)	OCT 79	OCT 79	OCT 79
FSD Approval (Milestone II) (2 Contractors)	JAN 82	JAN 82	JAN 82
PDR Complete	NOV 82	NOV 82	NOV 82
CDR Complete	JUN 84	JUN 84	JUN 84
Downselect (1 Contractor)	MAR 86	MAR 86	MAR 86
Factory Acceptance Test	JAN 88	JAN 88	JAN 88
Operational Assessment (OTI/A)	MAR 88	MAR 88	MAR 88
Program Review (Low Rate Initial Prod)	MAY 89	MAY 89	MAY 89
Operational Evaluation (OTI/B)	JUN 90	JUN 90	JUN 90
Low Rate Initial Production First Delivery	JUL 92	AUG 92	AUG 92

Navy ERF SATCOM Prog, December 31, 1995

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) —

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Additional Operational Testing (OTLIC)	JUL 92	JUL 92	JUL 92
Milestone III (Full Rate Production)	DEC 92	DEC 92	APR 93
First Unit Equipped Start	JAN 93	JAN 93	JAN 93
Service Depot Support Date	FEB 94	FEB 94	FEB 94
Initial Operational Capability (Navy)	JAN 94	JAN 94	APR 94
Organic Support Capability Date	FEB 94	FEB 94	FEB 94
FOT&E	MAR 94	MAR 94	AUG 94
Follow-On Procurement RFP Release	JAN 97	JAN 97	JAN 97
MDR Applique Award	OCT 97	OCT 97	OCT 97
MDR Operational Test	OCT 98	OCT 98	OCT 98
Milestone IV	FEB 99	FEB 99	FEB 99

b. (U) Previous Change Explanations —

(U) Due to redefinition of terminal quantities resulting from force restructure (CNO memo of 13 Jan 93), Milestone III was delayed from December 1992 to April 1993.

(U) "Recomplete RFP Release" was replaced with "Follow-on Procurement RFP Release."

(U) Initial Operational Capability (IOC) was changed from January 1994 to April 1994 due to platform installation availability rescheduling.

(U) Follow-on Operational Test and Evaluation (FOT&E) was rescheduled from March 1994 to August 1994 to coincide with the first period of Milstar System Initial Operational Test and Evaluation (IOT&E).

c. (U) Current Change Explanations — None.

d. (U) References —

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

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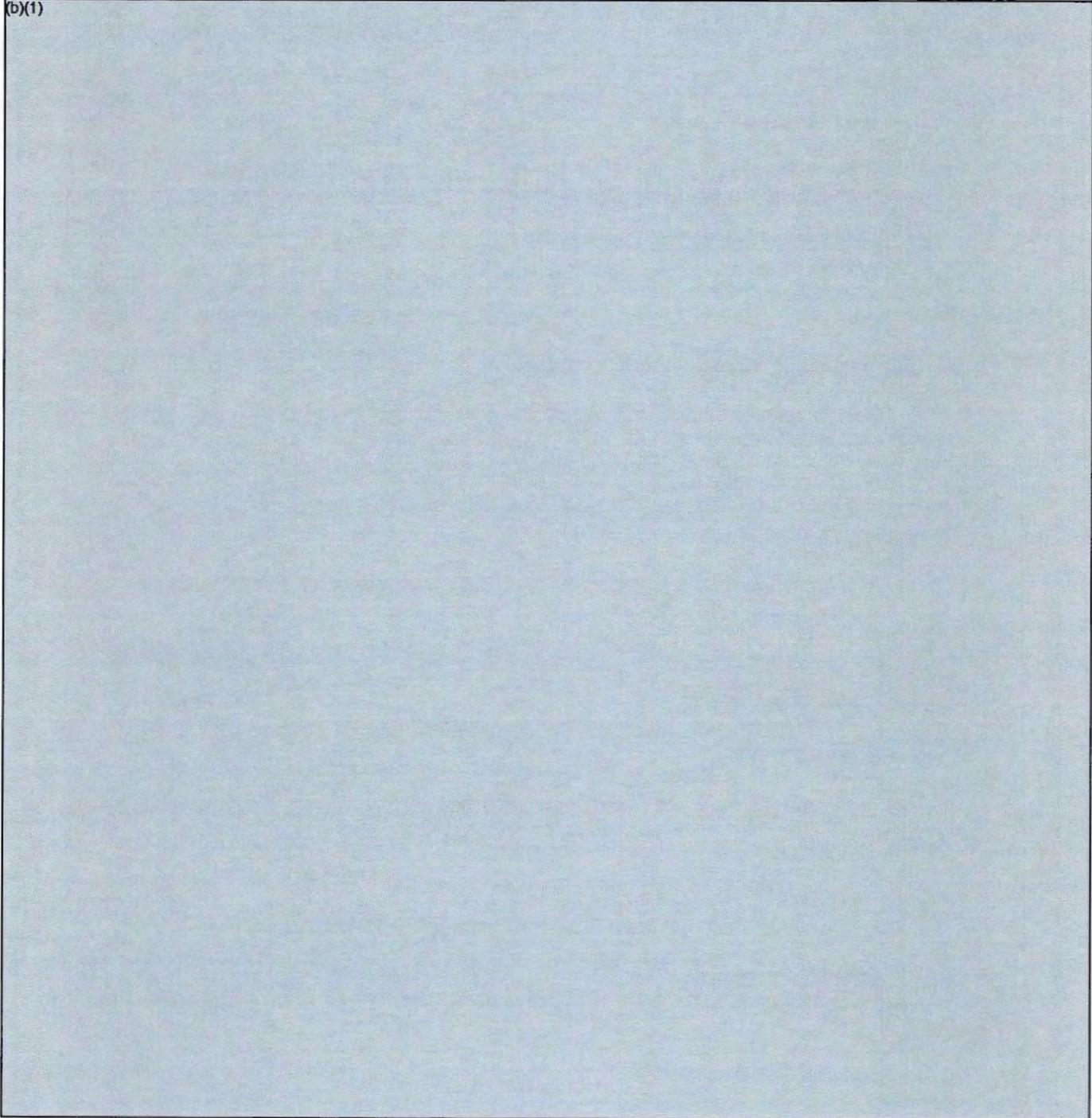
Navy EHF SATCOM Prog, December 31, 1995

10. (U) Performance Characteristics:

a. (U) Performance --

PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
-----	--------------------------------------	-------------------	------------------

(b)(1)



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Navy EHF SATCOM Prog, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

Navy EHF SATCOM Prog, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations —

The Program Manager's current estimates to date reflect actual performance demonstrated during testing. All values recorded under "Demonstrated Performance" are within or are better than APB Objectives/Thresholds.

Navy EHF SATCOM Prog, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

a. (U) Cost --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDTE&E)	457.4	457.4	470.6
Procurement	1395.2	1395.2	1353.4
Terminals	(991.7)		(1001.6)
Other Weapon Sys	(127.9)		(106.8)
Regular Support	(40.7)		(44.7)
Initial Spares	(234.9)		(200.3)
Construction (MILCON)	24.0	24.0	7.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	1876.6	1876.6	1831.7
 Escalation	 497.1	 497.1	 318.5
Development (RDTE&E)	(6.0)	(6.0)	(7.4)
Procurement	(486.3)	(486.3)	(310.2)
Construction (MILCON)	(4.8)	(4.8)	(0.9)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2373.7	2373.7	2150.2
 b. (U) Quantity --			
Development (RDTE&E)	7	7	7
Procurement	<u>386</u>	<u>386</u>	<u>371</u>
Total	393	393	378

Note: RDTE&E units are fully configured

[U] A total of 116 units were procured under IRIP, exceeding 10% of total production. Three one-year IRIPs were approved by the Navy Acquisition Executive as the Navy terminal program was ahead of Milstar Satellite schedules as well as Army and Air Force terminal program schedules.

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11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs — None.

d. (U) Nuclear Costs — None.

e. (U) References —

(U) Production Estimate:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated March 24, 1993.

12. (U) Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 93 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	1831.7	1876.6	
(2) Quantity	378	393	
(3) Unit Cost	4.846	4.775	1.48
b. (U) Procurement			
(1) Cost (BY90\$)	1353.4	1395.2	
(2) Quantity	371	386	
(3) Unit Cost	3.648	3.615	0.93

(U) None.

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	463.4	1881.5	28.8	2373.7
Previous Changes:				
Economic	-0.1	-70.8	-0.6	-71.5
Quantity	-	-29.7	-	-29.7
Schedule	+7.6	+23.3	-	+30.9
Engineering	+12.8	+21.5	-	+34.3
Estimating	-	-23.4	+0.8	-22.6
Other	-	-	-	-
Support	-	-88.0	-20.4	-108.4
Subtotal	+20.3	-167.1	-20.2	-167.0
Current Changes:				
Economic	-5.8	-70.9	-	-76.7
Quantity	-	-7.5	-	-7.5
Schedule	-	-3.3	-	-3.3
Engineering	-	12.2	-	+12.2
Estimating	0.1	18.0	-	+18.1
Other	-	-	-	-
Support	-	0.7	-	+0.7
Subtotal	-5.7	-50.8	-	-56.5
Total Changes	+14.6	-217.9	-20.2	-223.5
Current Estimate	478.0	1663.6	8.6	2150.2

Navy EHF SATCOM Prog, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Production Estimate	457.4	1395.2	24.0	1876.6
Previous Changes:				
Quantity	-	-17.7	-	-17.7
Schedule	+4.1	+15.9	-	+20.0
Engineering	+8.5	+15.2	-	+23.7
Estimating	+0.4	-17.2	+0.5	-16.3
Other	-	-	-	-
Support	-	-52.2	-16.8	-69.0
Subtotal	+13.0	-56.0	-16.3	-59.3
Current Changes:				
Quantity	-	-5.5	-	-5.5
Schedule	-	-2.8	-	-2.8
Engineering	-	8.6	-	+8.6
Estimating	0.2	13.4	-	+13.6
Other	-	-	-	-
Support	-	0.5	-	+0.5
Subtotal	+0.2	+14.2	-	+14.4
Total Changes	+13.2	-41.8	-16.3	-44.9
Current Estimate	470.6	1353.4	7.7	1831.7

b. (U) Previous Change Explanations --

RD&E

Economic: Revised inflation indices.

Schedule: Budget reductions delayed development completion of some software modifications.

Engineering: Funds included in outyears for potential Milstar II modifications.

Estimating: Adjustment for current and prior inflation.

Procurement

Economic: Revised inflation indices.

Quantity: Restructured fleet communication requirements defined in February 1994 resulted in 7 fewer terminals. Decommissioning of 2 submarines

Navy EHF SATCOM Prog, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

- Schedule:** resulted in requirement for 2 fewer terminals. FY 94 President's Budget (PB) reductions deferred 10 terminals to outyears. FY 95 procurement budget adjustments resulted in 4 additional units being procured under the current contract instead of in the outyears as previously planned. FY 96 PB: Production completion stretchout over 7 years versus 3 years.
- Engineering:** Restructured fleet communication requirements defined in February 1994 resulted in 24 more MDR appliques. Production of emergent requirements as well as inclusion of Navy EHF Communications Controller First Article Test increased engineering costs in the FY 96 PB.
- Estimating:** Revised estimates for production support, ancillary equipment, and spares to reflect the FY 95 cost information. Adjustments for current and prior inflation. The FY 96 PB reflects revised unit prices for follow-on buy due to acquisition reform and increased reliance on COIS/GOIS.
- Support:** Support changes resulting from the procurement deferral of 10 terminals to outyears. In the FY 96 PB, Support decreases due to quantity and schedule changes, reduction of 6 support systems, and revised spares requirements based on historical data.

MILCON

- Economic:** Revised inflation indices. Economic adjustment for Negative Program Change.
- Estimating:** Revised estimates for planned projects.
- Support:** FY 95 PB deleted 5 MILCON projects no longer required for shore terminals. FY 96 PB deleted 2 remaining MILCON projects.

c. (U) Current Change Explanations —

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) EDT&E		
Revised inflation rates. (Economic)	N/A	-5.8
Adjustment for current and prior inflation (Estimating)	+0.5	+0.6

Navy EHF SATCOM Prog, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised Pre-Planned Product Improvements(P3I) development estimates. (Estimating)	-0.3	-0.5
NOTE Subtotal	<u>+0.2</u>	<u>-5.7</u>
(2) Procurement		
Revised inflation rates. (Economic)	N/A	-70.9
Adjustment for Current and Prior inflation. (Estimating)	+6.0	+7.0
Reduced quantity of Navy EHF Communications Controllers (NECCs) required to meet fleet needs. (Quantity)	-5.5	-7.5
Revised procurement profiles for terminals, NECCs and Medium Data Rate (MDR) upgrades. (Schedule)	-2.8	-3.3
Additional requirement to provide interim polar EHF SATCOM coverage. (Engineering)	+8.6	+12.2
Updated estimates for NECC procurement and installation and MDR upgrade installation. (Estimating)	+7.4	+11.0
Support changes resulting from revised NECC and MDR estimates. (Support)	+0.5	+0.7
Procurement Subtotal	<u>+14.2</u>	<u>-50.8</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.040	-0.392	0.141	0.073	0.123	-0.012	—	-0.285	-0.352	5.688

Navy EHF SATCOM Prog, December 31, 1995

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) Procurement --		Initial Contract Price		
(U) <u>EHF Terminals:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
RAYTHEON COMPANY, MARLBOROUGH, MA				
ND0039-82-C-0146, FFP		\$83.7	N/A	24
Award: February 14, 1990				
Definitized: February 14, 1990				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$378.7	N/A	244	\$378.7	\$378.7

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) The Estimated Price At Completion does not include contract modifications currently in process.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 60.0% (15 yrs/25 yrs)
- (2) Percent Program Cost Appropriated: 54.5% (\$1172.9 / \$2150.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY82-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2006)</u>	<u>Total</u>
RDT&E	353.2	13.9	15.2	95.7	478.0
Procurement	730.7	66.5	88.2	778.2	1663.6
MILCON	8.6	-	-	-	8.6
OGM	-	-	-	-	-
Total	1092.5	80.4	103.4	873.9	2150.2

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1982				22.3	17.2	17.2	17.2	7.6
1983				30.2	24.4	24.4	24.4	4.9
1984				29.7	24.8	24.8	24.8	3.8
1985				38.0	32.8	32.8	32.8	3.4
1986				23.9	21.2	21.2	21.2	2.8
1987				37.4	34.2	34.2	34.2	2.7
1988				42.8	40.4	40.4	40.4	3.0
1989				27.9	27.4	27.4	27.4	4.2
1990				19.8	20.3	20.3	20.3	4.0
1991				16.2	17.2	17.2	17.2	4.3
1992				30.3	33.1	33.1	33.1	2.8
1993				23.2	25.9	25.9	23.7	2.7
1994				12.7	14.5	14.4	14.0	2.0
1995				17.1	19.8	19.7	17.4	1.9
1996				11.7	13.9	12.2	1.1	2.0
1997				12.5	15.2			2.2
1998				19.1	23.6			2.2

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160. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1999				20.1	25.5			2.2
2000				18.8	24.3			2.2
2001				16.9	22.3			2.2
Subtot	7			470.6	478.0	365.2	349.2	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1990	3		6.6	4.0	4.3	4.3	4.3	1.1
1991	1		2.0	1.2	1.3	1.3	1.3	1.6
1992	1		2.2	2.0	2.3	2.3	1.9	2.5
1993	9		19.6	11.9	13.9	13.8	6.4	3.2
1994	7		26.7	11.3	13.7	13.3	4.8	4.2
1995				6.3	7.8	7.5	2.0	3.8
1996				8.4	10.6	6.0	2.2	2.0
1997				4.0	5.2			2.2
1998				4.0	5.3			2.2
1999				4.0	5.4			2.3
Subtot	21		57.1	57.1	69.8	48.5	22.9	

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16c. (U) Program Funding Summary (Cont'd):

(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

1989		4.3	4.5	8.8	9.1	9.1	9.1	4.2
1990	21	17.4	44.6	119.2	127.5	127.5	127.5	4.0
1991	37	2.8	71.4	98.2	106.9	106.9	106.9	4.3
1992	53	1.8	118.9	137.1	154.0	154.0	147.6	2.8
1993	54	1.0	110.5	110.9	126.0	125.7	80.0	2.7
1994	58	0.4	137.6	93.1	107.4	105.5	69.6	2.0
1995			0.9	48.0	56.5	52.8	42.7	1.9
1996	10		20.6	46.5	55.9	23.4	2.7	2.0
1997		7.8	8.8	67.5	83.0			2.2
1998	10	7.2	20.3	42.2	53.1			2.2
1999	37	1.8	95.8	92.8	119.3			2.3
2000	24	1.0	59.9	77.3	101.5			2.2
2001	6		26.3	59.2	79.5			2.2
2002	40		123.4	128.0	175.6			2.2
2003			27.7	69.7	97.7			2.2
2004			21.9	80.3	115.0			2.2
2005			5.9	12.6	18.5			2.2
2006				4.9	7.3			2.2
Subtot	350	45.5	899.0	1296.3	1593.8	704.9	586.1	

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16c. (U) Program Funding Summary (Cont'd):

(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 Pre-Planned Product Improvements (P3I) such as MDR upgrades for retrofit into NESF terminals in the year in which the funds are budgeted.

Appropriation: 1205 Military Construction, Navy

1992				7.7	8.6	8.6	6.0	2.8
Subtot				7.7	8.6	8.6	6.0	
Grand Total	378	45.5	956.1	1831.7	2150.2	1127.2	964.2	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	7/7
Procurement	156/156

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 376 - @ Peak Rate: 5.0/mo			
FY 90 Base-Year \$	2.504	2.700	2.504
Then Year \$	0.000	0.000	0.000
@ Qty 116 (1st three years) - @ Peak Rate: 4.5/mo			
FY 90 Base-Year \$	2.504	1.598	2.504
Then Year \$	0.000	1.753	0.000

Design to Unit Production Costs were established in 1982 in Base Year \$ only for the total production quantity only (first three years not separately specified). Current estimate includes a Medium Data Rate communications capability not included in DTUPC configuration.

18. (U) Operating and Support Costs:

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18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

(U) Operating and support costs are the sum of all costs resulting from the operation, maintenance, and support of the terminals after acceptance into the Navy inventory. The operating costs are the sum of the cost of operating personnel and facilities, in addition to energy and software maintenance. The prime equipment inventory objective consists of 232 Ship, 70 Submarines, 60 Shore, 6 Training, and 3 Support terminals.

(U) Support costs include the following: (1) corrective maintenance labor and material at Organizational/Intermediate (O/I) and depot levels, (2) packaging and shipping costs incurred as a result of shipping failed and repaired items between organizational and depot level maintenance facilities, (3) preventive maintenance labor and material costs, (4) Support and Test equipment maintenance and material costs, (5) O/I and depot level maintenance shop spare costs, (6) O/I and depot level inventory storage costs, (7) documentation maintenance costs, (8) replenishment spare costs, (9) supply system management costs and, (10) the cost of training operators and O/I and depot level maintenance personnel.

(U) Source of data: Program Life Cycle Cost Estimate (PLCCE) prepared for MS III approval decision granted April 1993.

b. (U) Costs — (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg. Annual Cost Per Terminal	N/A
Personnel	18.0	N/A
Direct Depot Maintenance	39.0	N/A
Sustaining Investment	41.0	N/A
Other Direct Costs	0.0	N/A
Total	98.0	N/A

c. (U) Contractor Support Costs — None.

SELECTED ACQUISITION REPORT (RCE:DR-COMP(Q&A)823)
PROGRAM: THAAD System

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Theater High Altitude Area Defense (THAAD) System

2. (U) DoD Component: BMDO Joint Participants: The Department of the
Army is the Executing Agency

3. (U) Responsible Office and Telephone Number:
SPAE-MD-THA Col W Frederick Kilgore
P.O. Box 1500 Assigned: July 13, 1992
Huntsville, AL 35807-3801 AV 778-3503 COMM (205) 895-3503

Ballistic Missile Defense LTG Malcolm O'Neill
Organization, The Pentagon Assigned: February 1, 1993
Washington, DC 20301-7100 AV 225-7060 COMM (703) 695-7060

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DEPARTMENT OF DEFENSE

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~~Declassify on: OADR~~
~~Authority: 25 USC 552~~

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4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0603216C (Shared)	Project A2104, A2210, A3304 (Shared), A3354
PE 0603218C (Shared)	Project A3304
PE 0603861C (Shared)	Project A2260
PE 0603862C (Shared)	Project A2154
PE 0604216C (Shared)	Project A2104, A2210
PE 0604225C (Shared)	Project A2154, A2260
PE 0604861C (Shared)	Project A2260
PE 0604862C (Shared)	Project A2154
PE 0604863C (Shared)	Project A2154

5. (U) Related Programs:

PATRIOT PAC-3

6. (U) Mission and Description:

The mission of the Theater High Altitude Area Defense (THAAD) system is to defend against Theater Ballistic Missiles (TBMs) at long ranges and high altitudes. THAAD's long range capability will protect U. S. and allied Armed Forces, broadly dispersed assets and population centers against TBM attacks. THAAD's capability to intercept at high altitudes allows multiple intercept opportunities and will significantly mitigate the effects of weapons of mass destruction. The THAAD System consists of missiles, launchers, radar(s), battle management/command, control, communications and intelligence (BM/C3I) units, and support equipment. The THAAD radar utilizes state-of-the-art radar technology to accomplish its required functions of threat attack early warning, threat type classification, interceptor fire control, external sensor cueing, launch and impact point estimation, and kill assessment after intercept. The THAAD program includes an option for building a prototype called the User Operational Evaluation System (UOES). This UOES plan consists of building 40 missiles with 4 launchers, 2 BM/C3I units, 2 radars, and support equipment. The UOES will be used for early operational assessment and testing, allowing the user to influence the design in the development process. Additionally, the UOES will be available for a Commander-in-Chief to consider deploying during a national emergency. The THAAD System does not replace another system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Theater High Altitude Area Defense System (THAAD) requirement was initiated as a Concept Demonstration Program in 1990. Detailed system concepts were solicited from three industry teams during concept exploration and definition studies conducted August 1990 - May 1992. The THAAD System (formerly Upper Tier Theater Missile Defense System, UTTMDS, until the title change to THAAD in November

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7a. (U) Program Highlights (Cont'd):

1994) was approved at Milestone Decision Review I January 1992 for the Demonstration/Validation (Dem/Val) acquisition phase I. THAAD was assigned to the Program Executive Office Missile Defense (formerly Global Protection Against Limited Strikes) July 1992. The Dem/Val contract was awarded to Lockheed Missiles and Space Company (LMSC) September 1992. The Initial Design Review was successfully conducted January 1993. Throughout FY93, extensive efforts led to a successful Final Design Review in November 1993 for the Dem/Val design and the system configuration for early flight tests. A Low Mass Interceptor lethality test program was initiated with favorable tests results. In response to the desire of the U.S. Army Air Defense Artillery School (USAADASCH) for commonality in launcher maintenance and training, the launcher design was changed to the Palletized Loading System (PLS) August 1993. The Under Secretary of Defense for Acquisition and Technology directed, in January 1994, that the THAAD missile be nuclear hardened in flight. The contract was modified July 1994 to incorporate this effort. Final Design Review Update of the Dem/Val design was completed May 1994.

The Ground Based Radar (GBR) Program evolved from the Ballistic Missile Defense Organization (BMDO) Terminal Imaging Radar (TIR) Project which supported the BMDO in their sensor programs. This program evolved into the GBR-X in January 1988 and was again restructured to support near term goals of the Missile Defense Act of 1991 to include Theater Missile Defense (TMD) and Strategic Defense System protection against limited attacks. The Milestone I Defense Acquisition Board (DAB), 21 January 1992, and the UTMDS Acquisition Decision Memorandum (ADM), 28 January 1992, provided the basis for the current Family of Radars Dem/Val contract which was awarded September 1992.

b. (U) Significant Developments Since Last Report --

The first THAAD missile was launched at White Sands Missile Range (WSMR) 21 April 1995. All primary and secondary flight test objectives were achieved. The second THAAD missile was launched 31 July 1995. This was a planned non-intercept, guidance and control test. Shortly after leaving the canister, the missile executed the THAAD Energy Management Steering (TEMS) maneuver and then reoriented on the planned flight path. The missile continued to internally navigate with respect to the simulated target trajectory through Kill Vehicle (KV)/booster separation. The missile velocity was higher than expected and the missile corrected its flight path for a higher than expected target engagement to compensate for a shorter time of arrival. Following KV/booster separation, the KV received an in-flight target update and updated its trajectory. The increased KV velocity plus the higher altitude flight path exceeded the range safety parameters fifty-three seconds into the flight. The Ground

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7b. (U) Program Highlights (Cont'd):

Based Auto Destruct System (GBADS) correctly assessed the KV trajectory and commanded the flight termination event. Data analysis indicates a high probability that the FT-1 proven flare did not deploy. This event would result in a higher missile velocity and a higher altitude flight path. If the flight had not been terminated, it appears that the KV would have flown within simulated target trajectory intercept volume at acquisition. The third THAAD flight was a non-intercept fly-by test against a Storm Target conducted at WSMR 13 October 1995. This flight added the Storm Target, the actual system Battle Management Command, Control, Communications, and Intelligence, the THAAD radar in the "shadow mode," and additional software complexity. The fourth THAAD flight (the first intercept attempt) occurred on 13 December 1995 at WSMR. The THAAD flight test was not successful in achieving the exo-atmospheric intercept, but did have significant accomplishments. The missile successfully performed the TEMS maneuver, flare deployment, booster separation, in-flight navigation, and seeker shroud separation. The THAAD radar operated in a "shadow" role and maintained a solid track on both the interceptor and the target.

The first THAAD User Operational Evaluation System (UOES) Battery was activated at Ft. Bliss 6 June 1995.

The THAAD and Theater Missile Defense Ground Based Radar Project Offices merged 30 Jun 95, forming the THAAD System Project Office.

The EMD RFP was released 31 October 1995 and then it was consequently withdrawn 1 November 1995 as a result of OSD guidance to reassess all Ballistic Missile Defense programs.

Lockheed Martin Courtland Operations began performing all missile integration, assembly, and test operations for full missile round assemblies beginning with flight test vehicle-06 in November 1995.

There were eleven full-scale and ten sub-scale light-gas-gun tests successfully conducted. The lethality test series demonstrated the kill effectiveness of the objective kill vehicle design, established a THAAD lethality database, and supported Parametric Endo/Exo lethality simulation modeling for accreditation.

The THAAD System is expected to satisfy mission requirements.

This is an RDT&E-only SAR in accordance with Title 10, United States Code, Section 2432, "Selected Acquisition Reports."

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THAAD System, December 31, 1995

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date --
Gal Divert Attitude Control System (DACS) was terminated 29 January 1996 in a decision to save costs on the program. Liquid DACS is currently planned for the EMD missile.

The fifth THAAD flight test fired on 22 March at WSMR failed to intercept a Hera target. Both the target and interceptor launched as expected. However, preliminary analysis indicates that the interceptor experienced problems after booster separation causing loss of command and control functions. This resulted in the Kill Vehicle flying a ballistic trajectory until terminated by range safety. More detailed analysis of the flight test data is ongoing to pinpoint the specific cause of the missed intercept. The THAAD Palletized Loading System Launcher was used for the first time in this flight test, and it appears to have performed all the functions as expected. The THAAD radar appears to have successfully shadowed the mission by tracking both the target and the interceptor throughout their trajectories.

The launcher sub-contract was completed for the Dem/Val phase with the delivery of launcher #4 to LMMS-Huntsville on 9 February 1996.

A Build 2 EM/C3I Critical Design Review (CDR) was successfully conducted at Litton Data 21-22 February 1996.

Recent budgeting decisions caused significant replanning of the THAAD System program. These budgeting decisions are being validated through BMDO program replanning. Therefore a current comprehensive BMDO program plan is not available for this December 1995 SAR.

The December 1995 SAR content, especially the program current estimate, reflects program information truncated at FY01, consistent with recent budgeting decisions. This SAR contains blanks or "To Be Determined" in place of outyear funding and therefore the current estimate only reflects totals through FY2001. Similarly, the schedule milestones only reflect estimates contained in the recent budgeting decisions.

Truncation of program estimates creates artificially negative cost variances as shown in Section 13. Program totals and cost variances will significantly change once BMDO/Army complete and report on the new program estimate. BMDO plans to submit an exception SAR reflecting total program estimates to Congress in May, for the quarter ending March 31, 1996.

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8. (U) Threshold Breaches:

Recent program budget decisions prompted BMDO/Army to replan and restructure the THAAD System to produce new total program cost and schedule estimates. Preliminary program analysis indicates that the current Acquisition Program Baseline (APB) (dated February 13, 1995) cannot be recovered as new program planning is underway.

Munn-McCurdy unit cost reporting is not applicable for this pre-Milestone II program.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Army Concept Definition Studies Complete	MAY 92	MAY 92	MAY 92
Milestone I Review	JAN 92	JAN 92	JAN 92
THAAD Dem/Val Contract Award	JUN 92	JUN 92	SEP 92
GBR Dem/Val Contract Award	JUN 92	SEP 92	SEP 92
Integrated System Test Start	JUL 95	OCT 95	SEP 95
UOES Capability	N/A	N/A	SEP 98 (Ch-1)
System Delivery Complete (Less Missiles and Radars)	JUL 96	OCT 96	TBD (Ch-2)
Delivery of Optional 40 UOES Missiles Complete	TBD	TBD	TBD
Milestone II DAB Review	JUL 96	OCT 96	MAR 97 (Ch-3)
THAAD EMD Contract Award	AUG 96	NOV 96	TBD (Ch-2)
GBR EMD Contract Award	AUG 96	NOV 96	N/A (Ch-4)
LRIP Review	FEB 99	MAY 99	TBD (Ch-2)
Begin LRIP	N/A	N/A	SEP 02 (Ch-1)
Milestone III DAB Review	JUL 01	OCT 01	TBD (Ch-2)
FUE	JUL 01	OCT 01	TBD (Ch-2)
IOC	TBD	TBD	TBD

b. (U) Previous Change Explanations --

GBR EMD contract award changed from NOV 96 to SEP 96 to align with RFP release and award goals.

The THAAD Dem/Val contract award delay from JUN 92 to JUL 92 was caused by late release of the RFP. The GBR Dem/Val contract award changed from JUN 92 to AUG 92 to accommodate a RFP amendment required by the Missile Defense Act of 1991.

The THAAD Dem/Val contract award was changed from JUL 1992 to SEP 92 to reflect actual date. The GBR Dem/Val contract award was changed from AUG 92 to SEP 92 to reflect actual date.

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9b. (U) Schedule (Cont'd):

The delay in the Dem/Val contract awards resulted in changes of the subsequent major Milestones.

System Delivery Complete (Less Missiles and Radars) changed from SEP 96 to OCT 96 due to the impact of FY 95 funding reduction. As a result, Milestone II DAB Review, THAAD EMD Contract Award and Milestone III DAB Review were delayed 1 month.

GBR EMD Contract Award changed from SEP 96 to NOV 96 due to the impact of the THAAD and TMD-GBR FY 95 funding shortfalls.

FUE changed from SEP 01 to DEC 01 based on the results of the THAAD missile producibility study which revised the production lead time and production rate buildup.

c. (U) Current Change Explanations --

(Ch-1) Non-APB milestone estimates contained in the recent program budget decisions that have yet been validated through BMDO replanning.

(Ch-2) The following milestones: System Delivery Complete, Milestone II DAB Review, THAAD EMD Contract Award, LRIP Review, Milestone III DAB Review, FUE; changed to TEDs until BMDO/Army completes the new program estimate.

(Ch-3) Milestone II DAB Review changed from OCT 96 to MAR 97 to reflect an estimate explicitly stated in recent budgeting decisions. This estimate has not been validated through BMDO planning.

(Ch-4) The GBR EMD contract award changed from NOV 96 to N/A as the Radar development is incorporated into the THAAD EMD System contract award.

d. (U) References --

(U) Planning Estimate:

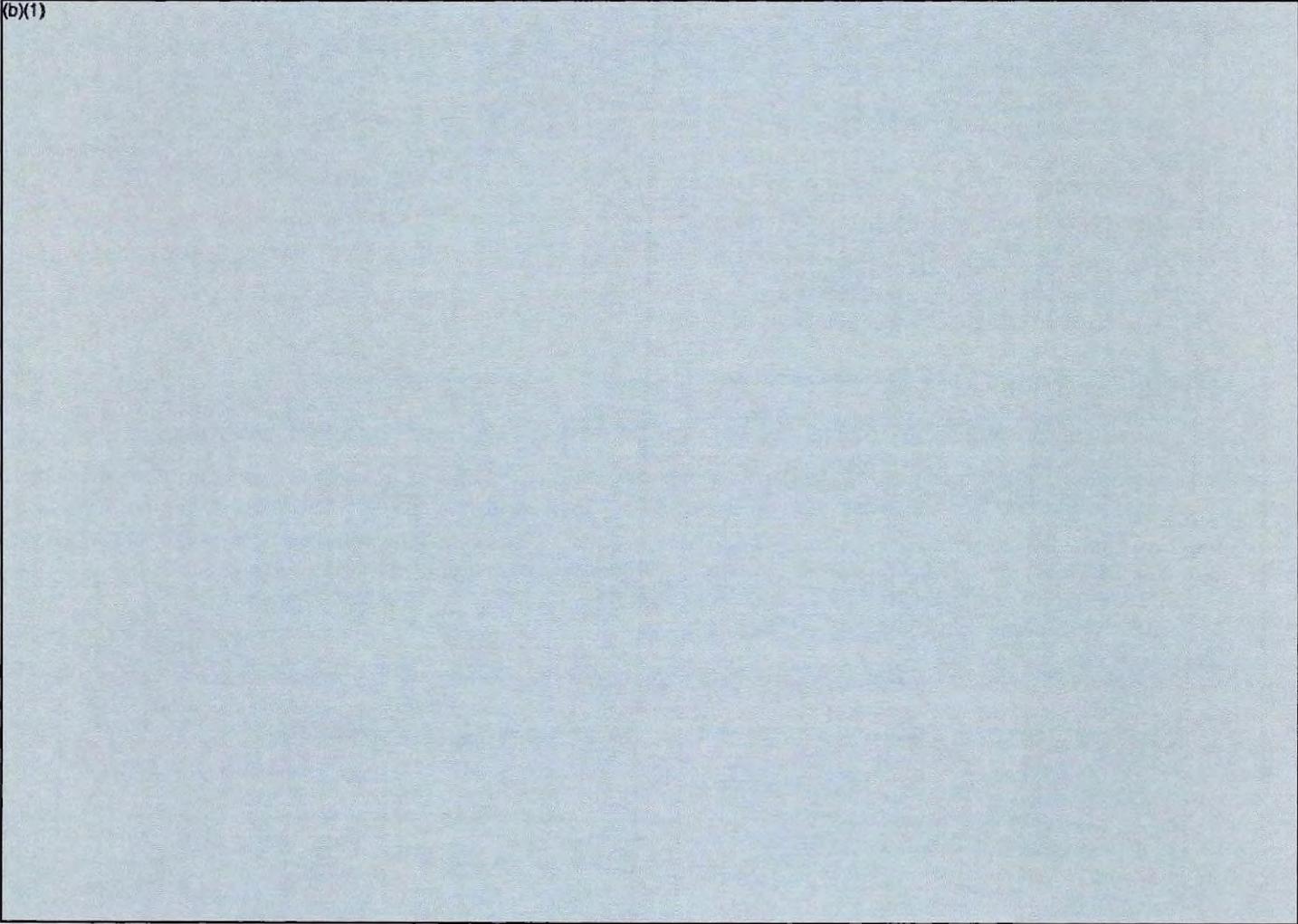
ADM (dated January 28, 1992) Subject: Milestone I Approval.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demonstrated	Current
	Objective/Threshold	Proof	Estimate



b. (U) Previous Change Explanations --

Transportability is changed from C-130 to C-141 to meet User's requirements.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

ADM (dated January 28, 1992) Subject: Milestone I Approval.

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10d. (U) Performance Characteristics (Cont'd):

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	3165.2	3903.0	3773.3
Procurement	0.0	N/A	0.0
Feculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 88 Base-Year \$	3165.2	3903.0	3773.3
Escalation	1158.5	1366.0	1173.9
Development (RDT&E)	(1158.5)	(1366.0)	(1173.9)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	4323.7	5269.0	4947.2

The Current Estimate shown is a partial estimate which will significantly change as BMDO/Army prepare a new program estimate based on the replanning and restructuring of the THAAD System program.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>0</u>	N/A	<u>0</u>
Total	0	0	0

A RDT&E option does exist for the User Operational Evaluation System (UOES) that consist of 40 missiles with 4 launchers, 2 BM/C3I units, 2 TMD-GBRs and support equipment. These RDT&E units are not fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

ADM (dated January 28, 1992) Subject: Milestone I Approval.

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11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 13, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (FEB 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY88\$)	3773.3	0.0	
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

Note: Unit Cost for Current Est is only calculated for fully configured end items.

b. (U) Procurement			
(1) Cost (BY88\$)	0.0	0.0	
(2) Quantity	0		
(3) Unit Cost	N/A	N/A	N/A

(U) Note: In accordance with Section 2433, Title 10, USC, unit cost information is not applicable since there are no fully configured end items.

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	4323.7	0.0	0.0	4323.7
Previous Changes:				
Economic	-176.2	-	-	-176.2
Quantity	-	-	-	-
Schedule	+54.7	-	-	+54.7
Engineering	+366.5	-	-	+366.5
Estimating	+599.9	-	-	+599.9
Other	-	-	-	-
Support	+66.5	-	-	+66.5
Subtotal	+911.4	-	-	+911.4
Current Changes:				
Economic	-145.8	-	-	-145.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	29.9	-	-	+29.9
Other	-172.0	-	-	-172.0
Support	-	-	-	-
Subtotal	-287.9	-	-	-287.9
Total Changes	+623.5	-	-	+623.5
Current Estimate	4947.2	-	-	4947.2

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1988 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	3165.2	0.0	0.0	3165.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	+22.0	-	-	+22.0
Engineering	+256.0	-	-	+256.0
Estimating	+401.9	-	-	+401.9
Other	-	-	-	-
Support	+41.5	-	-	+41.5
Subtotal	+721.4	-	-	+721.4
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	23.5	-	-	+23.5
Other	-136.8	-	-	-136.8
Support	-	-	-	-
Subtotal	-113.3	-	-	-113.3
Total Changes	+608.1	-	-	+608.1
Current Estimate	3773.3	-	-	3773.3

This current estimate truncates the program at FY2001, as the remaining program is being defined. This lack of program definition after FY2001 generates negative "Other Changes." The current estimate will significantly change as BMDO/Army prepare a new program estimate based on the replanning and restructuring of the THAAD System program.

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Schedule: Extension of Dem/Val and delay of EMD contract award.

Engineering: Program configuration changes caused by addition of Solid State Demonstration Array design for risk

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13b. (U) Cost Variance Analysis (Cont'd):

mitigation. Decrease Solid State Demonstration Array estimate to reflect down select (from 3 to 1 contractor); increased THAAD engineering costs to implement the Palletized Loading System (PLS), battery, launcher control system and risk mitigation.

Estimating: Revised estimate based on delayed Dem/Val contract award. Adjustment for THAAD software lines of code requirement and revised THAAD future year risk mitigation plan. Increases for TMD-GBR requirements for signal processors, 9 track Kalman filter and wideband track capability; increases resulting from reduction of National Missile Defense requirements; increases for testing (including targets) and risks; and extension of development program.

Support: Revised estimate for additional targets required. Refinement of THAAD targets requirement.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-153.4
Economic adjustment for negative program change. (Economic)	N/A	+7.6
Adjustment for Current and Prior Inflation. (Estimating)	+23.5	+29.9
Recent budget decisions require program restructure and redefinition. Lack of program beyond FY2001 is causing artificially negative program variances. (Other)	-136.8	-172.0
RDT&E Subtotal	<u>-113.3</u>	<u>-287.9</u>

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not Applicable.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --			Initial Contract Price		
(U) <u>THAAD Dem/Val:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Lockheed Missiles & Space, Sunnyvale, CA					
DASG60-92-C-0101, CPFF			\$688.9	N/A	0
Award: September 4, 1992					
Definitized: September 4, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$867.3	N/A	0	\$1095.7	\$1100.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-3.7	\$-8.4	
Cumulative Variances To Date (02/02/96)			\$-53.0	\$-15.5	
Net Change			\$-49.3	\$-7.1	

Explanation of Change:

THAAD major subcontractors and Lockheed contributed to the unfavorable variance changes during the last 12 months. Loral and Litton accounted for 42% of the change. Loral experienced increased overtime and staffing for manufacturing support due to technical producibility challenges, integration problems, and delivery delays with the Platinum Silicide (PtSi) seeker and packaging redesign overruns with the Indium Antimonide (InSb) seeker. Litton experienced delays and overruns in Build 2 BM/C3I software and increased overtime in developing tactical operations center software. Rocketdyne had delays in the divert attitude control system deliveries due to thruster redesign. Honeywell experienced overruns in the fabrication and testing of flight unit rate gyro packages. UTC had overruns due to booster redesign changes. Lockheed's variance changes were due to overruns in developing interface specifications, preparation for in-flight test planning, in-flight test survivability tasks, missile assembly and checkout tasks, target demonstration and radar shadow mission activities. Through Dec 95, the contract was 85% complete with Lockheed projecting a \$50M variance at completion. The PM has initiated action to extend the Dem/Val contract by six months, which will allow a replan of remaining flights and the conduct of other specific tasks.

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15. (U) Contract Information (Cont'd):

(U) <u>GBR DEM/VAL:</u>			Initial Contract Price		
Raytheon Corporation, Wayland, MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DASG60-92-C-0184, CPIF/AF			\$318.4	N/A	3
Award: September 17, 1992					
Definitized: September 17, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$369.6	N/A	3	\$503.2	\$512.2	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (02/02/96)			\$-53.9	\$-19.1	
Net Change			\$-146.6	\$-14.0	
			\$-92.7	\$5.1	

Explanation of Change:

Increased engineering support and manufacturing costs within the antenna equipment have contributed more than 50% of the unfavorable cost variance during the past 12 months. Specific problems that continue to affect costs within the antenna are increased nonrecurring engineering (NRE) and manufacturing costs of the transmit/receive (T/R) module; increased NRE and manufacturing costs of the T/R element assembly (T/REA); and increased NRE and subcontract cost of the beamformers, AC/DC converters and antenna enclosures. Additionally, Raytheon has been spending more than was budgeted on the software development effort and the test and evaluation effort at White Sands Missile Range. The favorable schedule variance during the past 12 months is due to receipt of overdue antenna equipment material and completion of past due manufacturing tasks associated with the antenna equipment.

With the program approximately 90% complete, the project office is confident that most problems have been identified and the cost impacts of corrective actions have been considered in the current estimate to completion.

(U) <u>TMD Targets Program:</u>			Initial Contract Price		
Coleman Research Corp., Orlando, FL			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DASG60-92-C-0217, CPFF			\$144.2	N/A	25
Award: October 14, 1992					
Definitized: October 14, 1992					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$178.9	N/A	25	\$178.9	\$178.9
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-1.6	\$-0.2
Cumulative Variances To Date (02/23/96)			<u>\$-4.1</u>	<u>\$-1.6</u>
Net Change			\$-2.5	\$-1.4

Explanation of Change:

There is no significant impact to the contract as indicated by the relatively minor changes to cost/schedule variances since last year.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 50.0% (5 yrs/10 yrs)
- (2) Percent Program Cost Appropriated: 48.8% (\$2415.1 / \$4947.2)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	1863.6	551.5	481.8	2050.3	4947.2
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1863.6	551.5	481.8	2050.3	4947.2

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16c. (U) Program Funding Summary (Cont'd):

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY88 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 RDT&E, Defense Agencies

1992				100.9	119.6	119.6	119.4	2.8
1993				324.4	393.6	389.4	288.0	2.7
1994				567.1	701.1	701.0	573.3	2.0
1995				514.5	649.3	600.5	108.6	1.9
1996				427.7	551.5	67.2	7.0	2.0
1997				365.6	481.8			2.2
1998				360.8	486.1			2.2
1999				388.2	534.8			2.3
2000				377.3	531.1			2.2
2001				346.8	498.3			2.2
Subtot				3773.3	4947.2	1877.7	1096.3	
Grand Total				3773.3	4947.2	1877.7	1096.3	

Program definition and corresponding funding beyond FY2001 are unavailable as BMDO/Army THAAD System replanning is underway.

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17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules -- None
- b. (U) Costs -- None.
- c. (U) Contractor Support Costs -- None.

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4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1506 ICM 3105250000 (Navy)
APPN 1611 ICM SCR DDG-51 (Navy) (Shared)
APPN 1810 ICM 3326140000 (Navy) (Shared)

5. (U) Related Programs:

F/A-18 Hornet; Joint Tactical Information Distribution System (JTIDS).

6. (U) Mission and Description:

The Multifunctional Information Distribution System (MIDS) is a multinational (U.S., France, Germany, Italy, and Spain) cooperative development program established to design, develop and deliver low-volume, lightweight tactical information system terminals for U.S. fighter aircraft, as well as foreign fighter aircraft, helicopters, ships and ground sites. The MIDS program will produce a terminal that is functionally equivalent to and interoperable with the JTIDS Class 2 terminal, but is smaller, lighter, more reliable, less costly, and compatible with all the Participants' designated platforms. The U.S. effort includes both participation in the terminal development, and the integration and test of the terminal in the F/A-18, ships, submarines, and U.S. Army platforms. The MIDS program office will also manage an accelerated separate procurement of terminals for some Air Force F-15s; those terminals will incorporate the commercial open architecture that has been adopted for MIDS-LVT. MIDS-LVT does not replace an existing DoD system.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In April 1986, following enactment of the Burn-Quayle Amendment to the Arms Export Control Act, the Under Secretary of Defense for Research and Engineering (USD(R&E)) proposed a NATO cooperative development of the JTIDS Low-Volume (LV) Class 2 terminal (the MIDS LV terminal), which would be smaller, lighter, fully compatible with, and as capable as the JTIDS Class 2 terminal. The proposal called for the U.S. to lead the project and for a U.S. contractor to lead an international industrial team (Principal Study Contract Team (PSCT)) in performing the MIDS Project Definition Phase (Phase I) analyses. In June 1986, the USAF was assigned to represent the U.S. in Phase I. In early 1987, a Memorandum of Understanding (MOU) signed by the Under Secretary of Defense for Acquisition (USD(A)) and equivalent officials from each of the other nations formalized agreement for Phase I. The MOU stipulated Singer-Kearfott (now GEC-Marconi) as the lead U.S. contractor.

In 1987, each nation awarded a Phase I contract to one of their national contractors to cooperatively define the requirement for a

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7a. (U) Program Highlights (Cont'd):

MIDS LV terminal; address the feasibility of producing the terminal; and produce a detailed plan for Engineering and Manufacturing Development (EMD) of the MIDS LV terminal. Singer-Kearfott was the U.S. contractor. The PSCT delivered a Phase I End-of-Study report in early 1989.

On 11 May 1989, the Under Secretary of the Navy (USSECNAV) determined that the MIDS LV terminal would be the most effective means to incorporate Tactical Digital Information Link J (TADIL J) capability into the F/A-18. Concurrently, the USAF determined that the F-16 should no longer be a candidate for the MIDS LV terminal. On 30 October 1989, the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence (ASD(C3I)), determined that only the Navy had a MIDS platform requirement and requested that it take the lead in MIDS with USAF support.

In phase I, the Navy operated under a Program Memorandum of Understanding (PMOU) with the nations of France, Germany, Italy, and Spain concerning general arrangements, and Supplement No.1 to the PMOU concerning initial program administration and pre-engineering and manufacturing development (Pre-EMD). The PMOU and its Supplements specify each country's share of the resource requirement for commonly funded items, with the U.S. share being 41%. The PMOU and its Supplements also require that specific national requirements be funded by the nation levying the requirement.

The Pre-EMD Phase of the program established an International Program Office (IPO). Optional national EMD risk reduction efforts continued during this phase. Concurrently with the MIDS-LVT decisions, the Navy initiated a Pre-EMD study with McDonnell-Douglas in June 1991. The purpose of this study was to determine the installation/integration requirements for MIDS-LVT aboard the F/A-18 aircraft.

In May, 1993, an Acquisition Review Board (ARB) approved integration of the MIDS-LVT into the F/A-18. The Milestone II DAB Acquisition Decision Memorandum (ADM) was signed 17 December 1993 authorizing contract award, initiating a 6-month study of options to reduce EMD program cost and schedule, and with direction to incorporate MOEs into the MIDS TEMP.

Supplement 2 to the PMOU was signed in February 1994, entering the program into the EMD phase. The EMD contract was awarded on 18 March 1994. The study directed by the ADM was completed, and the results approved by USD(A&T). A TEMP incorporating MOEs was approved by DT&E and DOT&E. A contract modification to implement the restructured program has been executed, and exit criteria were promulgated in a

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7a. (U) Program Highlights (Cont'd):

USD(A&T) memorandum of 5 October 1994.

Technical and cost studies were conducted by the Army to identify the costs and benefits of Army adoption of a MIDS variant terminal that could be procured during the MIDS production phase in place of the more costly JTIDS Class 2M. The studies identified the potential for significant life-cycle cost savings.

The Navy also conducted cost and technical studies related to the transition from the use of JTIDS Class 2 terminals to MIDS on ships, and a Navy Program Decision Memorandum (NPDM) was promulgated on 5 January 1995 which directed the transition from procurement of JTIDS Class 2 terminals to MIDS-LVT for Navy ships beginning in FY-99.

Studies continued on the most cost effective method of providing a reduced functionality Link-16 terminal for some F-15s. The Air Force formally established its requirement for an F-15 Fighter Data Link in late December 1994.

b. (U) Significant Developments Since Last Report --

Basic MIDS-LVT Developments: In March 1995, Integrated Baseline Reviews were conducted at each of the European contractors participating in MIDS-EMD development, and a similar review was conducted at the U.S. contractor, GEC-Marconi, in late April 1995. The MIDS-LVT Critical Design Review process commenced in November 1995 per the revised MIDS-LVT schedule directed by USD(A&T).

U.S. Army Developments: On 11 April 1995, the Army formally requested the development of a MIDS-LVT variant to provide a cost effective alternative to the JTIDS Class 2M during the MIDS production phase, and a contract modification to the existing contract was executed in August 1995 to develop, fabricate, and test MIDS-LVT(2) terminals for Army applications. The architecture of the restructured MIDS-LVT program has allowed the development of a variant for the Army that will not require any modifications to Army platforms which have previously integrated the JTIDS Class 2M, and more than 80 percent of the MIDS-LVT hardware will be identical between the basic MIDS-LVT and Army variant configurations.

U. S. Air Force Developments: Studies and analysis of the cost and benefits of alternatives to meet the USAF requirement for a reduced functionality fighter data link for the F-15 continued from January through June 1995, including a detailed cost analysis by the DoD Cost Analysis Improvement Group (CAIG). On 1 June 1995, USD(A&T) issued an Acquisition Decision Memorandum (ADM) directing that the Air Force requirement be met through a procurement managed by the MIDS International Program Office. The ADM also stated the office would

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7b. (U) Program Highlights (Cont'd):

be expanded and become a joint program office with the assignment of Air Force and Army personnel. The ADM terminated any separate development or acquisition efforts, and established an integrated product team to recommend an acquisition strategy for the F-15 terminal and MIDS-LVT production. On 15 August 1995, USD(A&T) issued another ADM based upon the recommendations of the integrated product team. The ADM directed that the terminal for the F-15 incorporate the open commercial architecture standards of MIDS and use a streamlined acquisition process. Subsequently, the FY-96 Appropriations Conference Report identified funds within the F-15 modification program to commence qualification of the F-15 Fighter Data Link (FDL) terminal, and requested USD(A&T) assurance that the acquisition strategy would not place U.S. companies at a competitive disadvantage.

c. (U) Changes Since As Of Date --

Related to the MIDS procurement of an FDL for some USAF F-15's, USD (A&T) provided the requested letters of assurance in early February 1996, and a Request for Proposals was issued on 22 February upon completion of Congressional coordination.

8. (U) Threshold Breaches:

There are no breaches to the Approved Acquisition Baseline dated March 8, 1994. There is no Numm McCurdy unit cost breach.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II (DAB)	DEC 93	DEC 93	DEC 93
Development Contract Award	DEC 93	DEC 93	MAR 94
F/A-18 Integration Contract Award (NAVAIR)	MAR 94	MAR 94	JUL 94
Critical Design Review (MIDS Terminal)	DEC 95	DEC 95	NOV 95 (Ch-1)
First EMD Terminal Delivery (IRT 1)	OCT 97	OCT 97	JUN 97
First EMD Flight	JUN 98	JUN 98	APR 98
TECHEVAL			
Start	JUN 00	JUN 00	JUL 99 (Ch-2)
Complete	JUN 00	JUN 00	SEP 99 (Ch-2)
OPEVAL			
Start	DEC 00	DEC 00	DEC 99 (Ch-2)
Complete	DEC 00	DEC 00	FEB 00 (Ch-2)
Low-Rate Initial Production First Delivery	OCT 00	OCT 00	JUL 00 (Ch-3)

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Initial Operational Capability	DEC 00	DEC 00	APR 00(Ch-3)
Milestone III (DAB)	JUN 01	JUN 01	MAY 00(Ch-4)
Full Rate Production Contract Award	JUN 01	JUN 01	JUN 00(Ch-4)
Organic Support Capability Date	JUN 03	JUN 03	JUL 03
Service Depot Support Date	JAN 04	JAN 04	JAN 04

Acronyms:

IRT - Integration Readiness Testing

b. (U) Previous Change Explanations --

Previous changes were the result of the restructuring of the MIDS-LVT Program by USD (A&T) to incorporate open architecture standards, and acceleration of development/integration activities.

c. (U) Current Change Explanations --

(Ch-1) Critical Design Review commenced November 1995.

(Ch-2) Revised F/A-18 IECEVAL and OPEVAL dates as a result of restructured MIDS-LVT program approved by USD(A&T). A revised Acquisition Program Baseline is in review that incorporates MIDS on Ships (MOS) and Army variant development. Due to the previous integration of Link-16 on Navy ships, the test schedule for MIDS on Ships will precede the F/A-18, and will allow an earlier transition of MIDS into full rate production. The next SAR will reflect the milestones for MIDS on Ships and Army test and evaluation.

(Ch-3) Dates are related to F/A-18 test and evaluation milestones.

(Ch-4) Dates are related to F/A-18 test and evaluation milestones. MOS will allow acceleration of these dates, which will be reported in the next SAR.

Note: This SAR does not report MIDS F-15 Fighter data Link (FDL) estimates. A revised APB which incorporates FDL milestones is in review. The next SAR will incorporate milestone data. MIDS FDL costs are included in the overall F-15 modification program budget.

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9d. (U) Schedule (Cont'd):

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Coded Data Rate (Kbps)				
Standard Packing	28.8	28.8 / 28.8	TBD	28.8
Packed 2 DP	57.6	57.6 / 56.6	TBD	57.6
Packed 4 DP	115.2	115.2 / 115.2	TBD	115.2
	115.2			
Relay Range (nm)	1200	1200 / 500	TBD	1200
Communication Range (NM)	300	300 / 300	TBD	300
Voice Channels	2	2 / 1	TBD	2
Coded Message Error	1	1 / 2	TBD	1

(b)(1)

Ac					
MTBF (hr)(lab)	1000	1000 / 1000	TBD	1000	
MFHBMCF (hr)(field)	300	300 / 220	TBD	300	
MTR (0-level) (min)	30	30 / 30	TBD	30	
Volums (dm3)	16.4	16.4 / 16.4	TBD	16.4	
Weight (kg)	29.5	29.5 / 29.5	TBD	29.5	

Acronyms:

DM3 - Cubic Decimeters

DP - Double Pulse

KBPS - Kilobytes per second

KG - Kilograms

MFHBMCF - Mean Flight Hours Between Mission Critical Failures

MTBF - Mean Time Between Failures

MTR - Mean Time to Repair

NM - Nautical miles

b. (U) Previous Change Explanations --

Ac was added at the Milestone II (DAB) review.

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10c. (U) Performance Characteristics (Cont'd):

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	481.1	481.1	493.1
Procurement	443.8	443.8	447.1
Prime Mission Eqmt (PME)	(313.7)		(264.5)
Production Support	(10.5)		(35.6)
Total Flyaway	(324.2)		(300.1)
Other Wpn Sys	(55.7)		(98.4)
Peculiar Support	(6.6)		(7.0)
Initial Spares	(57.3)		(41.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	924.9	924.9	940.2
Escalation	194.6	194.6	189.7
Development (RDT&E)	(51.9)	(51.9)	(57.6)
Procurement	(142.7)	(142.7)	(132.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1119.5	1119.5	1129.9
b. (U) Quantity --			
Development (RDT&E)	42	42	42
Procurement	<u>630</u>	<u>630</u>	<u>671</u>
Total	672	672	713

Note: The quantity increase in procurement is due to the transition from procuring JTIDS ship terminals to MIDS-LVT starting with the FY-99 equipment buy for ships, as directed in the JTIDS NPDM letter of 5 January 1995. Approved LRIP quantities are 24 in FY-99 and 82 in FY-00.

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11c. (U) Total Program Cost and Quantity (Cont'd):

c. (U) Foreign Military Sales/International Cooperative Programs --
Funding for MIDS-LVT European Participants:

	1995	1996	1997	1998
France	27.8	28.6	30.7	22.3
Italy	22.2	16.7	20.5	14.4
Germany	7.9	9.0	7.4	5.7
Spain	6.5	7.3	10.0	5.4
Eurofighter	4.9	4.5	4.8	3.1

Includes foreign common (PMOU) costs only.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated March 08, 1994.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (MAR 94 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY92\$)	940.2	924.9	
(2) Quantity	719	672	
(3) Unit Cost	1.319	1.376	-4.19
b. (U) Procurement			
(1) Cost (BY92\$)	447.1	443.8	
(2) Quantity	671	630	
(3) Unit Cost	0.666	0.704	-5.41

Note: Includes MIDS-LVT costs only. The MIDS F-15 FDL terminal is budgeted and managed as part of the F-15 modification program.

19. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	533.0	586.5	0.0	1119.5
Previous Changes:				
Economic	+10.1	-4.2	-	+5.9
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.0	+10.1	-	-4.9
Other	-	-	-	-
Support	-	-9.3	-	-9.3
Subtotal	-4.9	-3.4	-	-8.3
Current Changes:				
Economic	-13.9	-37.4	-	-51.3
Quantity	-	22.7	-	+22.7
Schedule	-	-	-	-
Engineering	-	63.2	-	+63.2
Estimating	36.5	-98.0	-	-61.5
Other	-	-	-	-
Support	-	45.6	-	+45.6
Subtotal	+22.6	-3.9	-	+18.7
Total Changes	+17.7	-7.3	-	+10.4
Current Estimate	550.7	579.2	-	1129.9

MIDS-LVT, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDTE	PROC	MILCON	TOTAL
Development Estimate	481.1	443.8	0.0	924.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-18.0	-25.0	-	-43.0
Other	-	-	-	-
Support	-	-8.9	-	-8.9
Subtotal	-18.0	-33.9	-	-51.9
Current Changes:				
Quantity	-	18.1	-	+18.1
Schedule	-	-	-	-
Engineering	-	49.5	-	+49.5
Estimating	30.0	-66.7	-	-36.7
Other	-	-	-	-
Support	-	36.3	-	+36.3
Subtotal	+30.0	+37.2	-	+67.2
Total Changes	+12.0	+3.3	-	+15.3
Current Estimate	493.1	447.1	-	940.2

b. (U) Previous Change Explanations --

RDTE

Economic: Revised escalation indices

Estimating: Adjustments due to contract negotiations and revised estimates of EMD support costs

Procurement

Economic: Revised escalation indices

Estimating: Revised estimate of MIDS terminal costs

Support: Revised estimate of MIDS support costs

MIDS-LVT, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>EDT&E</u>		
Revised escalation indices. (Economic)	N/A	-13.9
Adjustment for Current and Prior Inflation. (Estimating)	+3.2	+3.5
Revised estimate of MIDS-LVT terminal development costs (Estimating)	-1.6	-1.7
Transfer of Link-16 engineering efforts from JTIDS to MIDS (Estimating)	+28.4	+34.7
EDT&E Subtotal	<u>+30.0</u>	<u>+22.6</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-46.4
Economic adjustment for negative program change. (Economic)	N/A	+9.0
Revised estimate of MIDS-LVT unit cost due to incorporation of open commercial architecture standards (Estimating)	-66.7	-98.0
Reduced initial spares cost for MIDS associated with reduction in terminal unit cost (Support)	-21.2	-27.8
Revised estimate for MIDS F/A-18 installation and other related support costs (Support)	+33.3	+43.4
Procurement of an additional 41 MIDS terminals for Navy ship platforms (Quantity)	+18.1	+22.7
Configuration differences in MIDS installations added on Navy ship platforms (Engineering)	+49.5	+63.2
Additional support costs associated with increase in quantities for Navy ship platforms (Support)	+24.2	+30.0
Procurement Subtotal	<u>+37.2</u>	<u>-3.9</u>

MIDS-LVT, December 31, 1995

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
1.666	-0.064	-0.064	--	0.089	-0.093	--	0.051	-0.081	1.585

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) EDT&E --

(U) MIDS-LVT EMD
 MIDSCO, Inc., Wayne, NJ
 H00039-94-C-0008, CFI/AF
 Award: March 18, 1994
 Definitized: March 31, 1994

Target	Initial Contract Price	
	Ceiling	Qty
\$360.1	N/A	60

Current Contract Price		
Target	Ceiling	Qty
\$342.0	N/A	72

Estimated Price At Completion	
Contractor	Program Manager
\$335.0	\$345.7

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$0.2	\$-1.0
Cumulative Variances To Date (12/31/95)	\$-2.9	\$-4.7
Net Change	\$-3.1	\$-3.7

Explanation of Change:

There are various causes that contribute to the minor negative schedule variance, including the study and implementation of customer requested changes, and the management challenge of working with numerous international customers with different interface requirements that required harmonization.

Primary drivers for the minor negative cost variance have been the implementation of risk mitigation plans, specifically plans to preserve the terminal software development schedule, and a plan to reduce the technical integration risk of the platforms using the MIL-STD 1553 or STANAG 3910 data buses.

Note: Additional Contract Comments

The contract value reflects international effort, including the U.S., France, Italy, Germany, and Spain. The MIDS prime contract is

MIDS-LVT, December 31, 1995

15. (U) Contract Information (Cont'd):

a CPIF/AF that was awarded on 18 March 1994. The contractor commenced CPR submissions in October 1994 in accordance with the revised architecture of the MIDS as briefed and approved by USD(A&T). Contract options are not included in the PM's EAC. The Contract Budget Baseline and PM's estimated costs include Army development costs and additional EMD terminals for the Army and Navy. A formal design to cost program is not established in the contract; however, the contractor and program office are pursuing reductions to production unit costs, and a production unit cost exit criterion for LRIP has been established.

(U) <u>F/A-18 INTEGRATION:</u> McDonnell Douglas, St. Louis, MO N00019-94-C-0000, CPFF Award: July 1, 1994 Definitized: N/A			Initial Contract Price			
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	
			\$28.6	N/A	0	
Current Contract Price			Estimated Price At Completion			
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>		
\$28.6	N/A	0	\$25.3	\$25.3		
			<u>Cost Variance</u>	<u>Schedule Variance</u>		
Previous Cumulative Variances			\$-0.1	\$-0.2		
Cumulative Variances To Date (12/31/95)			<u>\$2.1</u>	<u>\$-1.4</u>		
Net Change			\$2.2	\$-1.2		

Explanation of Change:

This effort's CSSR now reports a cumulative positive cost variance and a cumulative negative schedule variance. These variances are primarily the result of changes to the Statement of Work and schedule shifts since the inception of the contract. Schedule variance is expected to begin recovery in 3rd quarter 1996. With 17.5% of the budget spent, a recovery to the planned schedule is possible.

Note: Additional Contract Comments

The F/A-18 Integration contract (CPFF) was awarded to McDonnell Douglas Aerospace (MDA) to perform the F/A-18 MIDS hardware integration in July 1994.

MIDS-LVT, December 31, 1995

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(1) Percent Program Completed: 35.0% (7 yrs/20 yrs)

(2) Percent Program Cost Appropriated: 24.2% (\$273.6 / \$1129.9)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY90-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2009)	<u>Total</u>
RDTE&E	198.7	74.9	67.7	209.4	550.7
Procurement	-	-	-	579.2	579.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	198.7	74.9	67.7	788.6	1129.9

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Excl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: RDTE&E - All Sources

1990				12.4	11.9	11.9	10.4	4.0
1991				9.9	9.7	9.7	8.6	4.3
1992				26.0	26.5	26.5	23.1	2.8
1993				34.8	36.3	36.2	34.5	2.7
1994				43.6	46.3	46.2	38.1	2.0
1995				62.8	68.0	67.4	37.0	1.9

MIDS-LVT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: RDT&E - All Sources (Cont'd)

1996				67.7	74.9	18.2	0.4	2.0
1997				59.9	67.7			2.2
1998				62.1	71.7			2.2
1999				44.6	52.7			2.3
2000				34.0	41.1			2.2
2001				24.6	30.3			2.2
2002				7.6	9.6			2.2
2003				3.1	4.0			2.2
Subtot	42			493.1	550.7	216.1	152.1	

Appropriation: Procurement - All Sources

1999	41	4.1	39.3	60.7	73.4	-		2.3
2000	94	8.8	47.8	81.0	100.0			2.2
2001	85	21.1	32.2	89.4	112.9			2.2
2002	86		33.0	46.2	59.9			2.2
2003	84		28.1	40.7	53.8			2.2
2004	85		29.2	41.3	56.0			2.2
2005	82		22.8	34.9	48.0			2.2

MIDS-LVT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: Procurement - All Sources (Cont'd)

2006	82		22.4	34.5	48.5			2.2
2007	20		7.5	11.6	16.7			2.2
2008	12		3.8	6.5	9.5			2.2
2009				0.3	0.5			2.2
Subtot	671	34.0	266.1	447.1	579.2			

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	713	34.0	266.1	940.2	1129.9	216.1	152.1	
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Appropriation: 1319 Research, Development, Test + Eval, Navy

1990				3.0	2.9	2.9	2.9	4.0
1991				4.8	4.7	4.7	4.7	4.3
1992				9.8	10.0	10.0	9.8	2.8
1993				11.9	12.4	12.4	11.9	2.7
1994				21.7	23.0	22.9	15.5	2.0
1995				17.0	18.4	18.3	9.5	1.9
1996				28.0	31.0	2.6	0.4	2.0

MIDS-LVT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1997				25.5	28.8			2.2
1998				39.5	45.6			2.2
1999				32.4	38.3			2.3
2000				23.1	27.9			2.2
2001				13.4	16.5			2.2
2002				7.6	9.6			2.2
2003				3.1	4.0			2.2
Subtot	16			240.8	273.1	73.8	54.7	

Appropriation: 1506 Aircraft Procurement, Navy

1999	24	4.1	12.8	27.9	33.7			2.3
2000	82	8.8	29.7	59.8	73.7			2.2
2001	82	21.1	26.5	68.9	86.9			2.2
2002	82		25.3	38.5	49.6			2.2
2003	82		24.3	36.9	48.6			2.2
2004	82		23.4	35.5	47.8			2.2
2005	82		22.8	34.9	48.0			2.2
2006	82		22.4	34.5	48.5			2.2

MIDS-LVT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Than-Year \$			Escl Rate (%)
		Nonrac	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2007	20		7.5	11.6	16.7			2.2
2008	12		3.8	6.5	9.5			2.2
2009				0.3	0.5			2.2
Subtot	630	34.0	198.5	355.3	463.5			

Appropriation: 1611 Shipbuilding and Conversion, Navy

1999	3		5.7	5.7	7.2			2.3
2000	3		5.7	5.7	7.3			2.2
2001	3		5.7	5.7	7.5			2.2
2002	4		7.7	7.7	10.3			2.2
2003	2		3.8	3.8	5.2			2.2
2004	3		5.8	5.8	8.2			2.2
Subtot	18		34.4	34.4	45.7			

Appropriation: 1810 Other Procurement, Navy

1999	14		20.8	27.1	32.5			2.3
2000	9		12.4	15.5	19.0			2.2
2001				14.8	18.5			2.2

MIDS-LVT, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrac	Rac		Program	Obligated	Expended	

Appropriations: 1810 Other Procurement, Navy (Cont'd)

Subtot	23		33.2	57.4	70.0			
Navy	687	34.0	266.1	687.9	852.3	73.8	54.7	

Appropriation: 0400 RDT&E, Defense Agencies

1990				9.4	9.0	9.0	7.5	4.0
1991				5.1	5.0	5.0	3.9	4.3
1992				16.2	16.5	16.5	13.3	2.8
1993				22.9	23.9	23.8	22.6	2.7
1994				21.9	23.3	23.3	22.6	2.0
1995				45.8	49.6	49.1	27.5	1.9
1996				39.7	43.9	15.6		2.0
1997				34.4	38.9			2.2
1998				22.6	26.1			2.2
1999				12.2	14.4			2.3
2000				10.9	13.2			2.2
2001				11.2	13.8			2.2
Subtot	26			252.3	277.6	142.3	97.4	
DoD	26			252.3	277.6	142.3	97.4	

MIDS-LVI, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Than-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expanded	

Appropriation: 0400 EDT&E, Defense Agencies (Cont'd)

Grand Total	713	34.0	266.1	940.2	1129.9	216.1	152.1	
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Obligations and expenditures reflect program office records as of December 31, 1995.

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

- a. (U) Assumptions and Ground Rules --

The O&S Cost portion of the Program Manager Life Cycle Cost Estimate of April 1993 depicts a 24-year support period of terminals installed on 630 F/A-18 aircraft. This period includes a phase-in, steady-state, and phase-down profile with a terminal operational life estimated to be 15 years. The annual operating hours per aircraft for peace-time deployment are estimated to be 400. The maintenance concept analyzed is the three level structure (i.e., Organizational, Intermediate and Depot) and assumes the availability of Consolidated Automated Support System (CASS) stations at the Intermediate and Depot levels of maintenance. The terminal reliability and maintainability characteristics used are consistent with the requirements contained in the Operational Requirements Document. Other pertinent cost estimates include use of values experienced by analogous systems including JTIDS and the AN/ARC-182 radio.

MIDS-LVT, December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per MIDS - LVT	Avg Annual Cost Per N/A
Depot Maintenance	0.4	N/A
Depot Non-Maintenance	2.5	N/A
Training	0.5	N/A
Sustaining Investment	1.3	N/A
ISSA	2.5	N/A
ISEA	0.9	N/A
Other ILS	0.1	N/A
Total	8.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	---	---	13.7	13.7
Total	---	---	---	13.7	13.7

SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: Crusader (AFAS/FARV)

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

Crusader - (formerly Advanced Field Artillery System/Future Armored Resupply Vehicle - AFAS/FARV)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

Project Manager Crusader	COL William Sheaves
Attention: SFAE-FAS-CR	Assigned: September 16, 1994
Picatinny Arsen, NJ 07806-5000	AV 880-4588 COMM 201/724-4588

4. Program Elements/Procurement Line Items:

RDT&E:

- PE 6.36.45.A Project D409, DB88, DB98, DB87
- PE 6.38.54.A Project D505, C68
- PE 6.48.54.A Project D503, D2KT
- PE 6.46.45.A Project D2KT, D417, D418

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5. Related Programs:

Multi-option Fuze for Artillery (MOFA) is a fuze currently Engineering Manufacturing Development (EMD) and funded in PE 64645, DA Project D175. MOFA will be used by Crusader to meet its rate-of-fire and automated ammunition handling requirements.

DIRECTORATE FOR INTELLIGENCE INFORMATION AND SECURITY REVIEWS (DIA/ISIP)
DEPARTMENT OF DEFENSE

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Crusader (AFAS/FARV), December 31, 1995

6. Mission and Description:

Crusader will be the indirect fire support system providing direct and general support fires to the maneuver forces on the battlefield. Crusader consists of a self-propelled howitzer (SPH), and a resupply vehicle (RSV). Crusader responds to the battlefield deficiencies identified in the Close Combat Battlefield Functional Mission Area and the Fire Support Battlefield Functional Mission Area and fulfills the need for an indirect fire weapon system that has increased range and can survive through autonomous operations.

Crusader's SPH will provide close, tactical, and operational fires during offensive and defensive operations; have a 155mm primary armament with significantly increased capabilities over the current M109-series fleet; provide increased rate-of-fire, hold more ammunition, be more responsive and survivable on the battlefield, with reduced manpower requirements; provide increased lethality; be deployable worldwide; and, provide for forward maintenance and employ future maintenance concepts.

The companion vehicle to the SPH will be Crusader's RSV. The RSV will sustain the SPH with ammunition and fuel as it provides close, tactical, and operational fires; be a self-propelled armored vehicle with significantly increased capabilities over the current system, M992A1 FAASV; automate resupply functions; provide increased payload capability, and increased survivability with reduced manpower requirements; enable the SPH to achieve increased lethality levels and achieve independent mission execution; be deployable worldwide; and, provide forward maintenance support and employ future maintenance concepts.

7. Program Highlights:

a. Significant Historical Developments --

Early in fiscal year 1995, the Principal Deputy Under Secretary of Defense (Acquisition & Technology) signed the Acquisition Decision Memorandum (ADM) which approved Crusader to proceed into Demonstration/Validation (Dem/Val) as a single program. The ADM also directed that the Army shall plan for a Milestone II DAB or equivalent review, incorporating as many acquisition reform and streamlining measures as practical.

A letter contract was signed on December 29, 1994 with United Defense Limited Partnership to initiate development phases I and II (DEM/VAL) of Crusader. The contract engaged the expertise of five other major defense subcontractors. The subcontractors are Teledyne Vehicle Systems (Muskegon, Michigan), Lockheed Martin Defense Systems (Pittsfield, Massachusetts), Lockheed Martin Armament Systems (Burlington, Vermont), General Dynamics Land Systems (Sterling Heights, Michigan), and Electronic Data Systems (Herndon, Virginia). The contract is based upon streamlined acquisition initiatives, and

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Crusader (AFAS/FARV), December 31, 1995

7a. Program Highlights (Cont'd):

upon an integrated product development philosophy with "Team Crusader" consisting of each of the contractor team players and the Army's Project Management Office.

b. Significant Developments Since Last Report --

The System Requirements Review (SRR) was conducted in October 1995. The SRR successfully demonstrated the decomposition of Crusader requirements down to the system segment level. The requirements allocation process is continuing and will culminate at the System Functional Review anticipated in June 1996.

Component Maturation has generally progressed well in the areas of resupply, electronics, mobility, and data. Problems have been encountered in armament maturation. These problems involved premature ignitions of liquid propellant, piston reversals and hesitations, and pressure oscillations in the Regenerative Liquid Propellant Gun (RLPG) assets. An independent Army Science Board (ASB) review of the RLPG development program, conducted October through December 1995, concluded that the program is "doable" but not without high risk, and requires additional time and 6.2 technology efforts to support weaponization.

As a result of armament maturation problems, the Army is currently considering changing from an RLPG to a solid propellant armament. The possibility of this change was acknowledged in the Crusader Milestone I Acquisition Decision Memorandum, which required the Army to continue development of a solid propellant armament as a risk mitigation measure. The change is driven by increasing RLPG cost, schedule and technical risks, and diminishing operational effectiveness differences between liquid and solid propellant armament systems.

The Crusader Senior Level Integrated Product Team Coordinating Council (SLICC) was chartered and conducted its first meeting in October 1995. The SLICC consists of 35 members from key functional areas in DA and OSD. Members of the SLICC are responsible for continuous program oversight, improved communication, problem resolution, and the development of the Integrated Program Assessment for the Crusader Milestone II decision.

The Crusader system is expected to satisfy mission requirements.

c. Changes Since As Of Date --

The Secretary of the Army, after consulting with the Secretary of Defense, decided on March 19, 1996 to change from a liquid propellant (LP) based armament system to a solid propellant (SP) based armament system for Crusader. The change was made after the Army Science Board

Crusader (AFAS/FARV), December 31, 1995

7c. Program Highlights (Cont'd):

showed LP to have unacceptable technical, cost, and schedule risks. The timeliness of the decision allows the SP back-up program to be seamlessly inserted into the existing development contract and executed within the parameters of the Acquisition Program Baseline (APB).

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated January 4, 1995.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
ORD Approval	JUN 93	JUN 93	JUN 93
Milestone I ASARC	OCT 94	OCT 94	OCT 94
Milestone I DAB Review	NOV 94	NOV 94	NOV 94
Development Phase I & II Contract Award	JUN 95	JUN 95	DEC 94
First Prototype Delivered	OCT 99	OCT 99	OCT 99
Early User Test Start			
Start	OCT 99	OCT 99	OCT 99
Complete	JAN 00	JAN 00	JAN 00
DAE IPR	APR 00	APR 00	APR 00
Phase III Contract Award	APR 00	APR 00	APR 00
Critical Design Review (CDR)	JUN 00	JUN 00	JUN 00
First Pre-Production Delivery	APR 02	APR 02	APR 02
Pre-Production Qualification Test			
Start	APR 02	APR 02	APR 02
Complete	JUL 03	JUL 03	JUL 03
LRIP IPR	AUG 03	AUG 03	AUG 03
LRIP Contract Award	OCT 03	OCT 03	OCT 03
LRIP First Delivery	OCT 04	OCT 04	OCT 04
IOT&E			
Start	JAN 05	JAN 05	JAN 05
Complete	APR 05	APR 05	APR 05
First Unit Equipped (FUE)	JUL 05	JUL 05	JUL 05
Organic Support Capability	SEP 05	SEP 05	SEP 05
Milestone III DAB Review	OCT 05	OCT 05	OCT 05
Full Rate Production Contract Award	OCT 05	OCT 05	OCT 05
Service Depot Support Date	DEC 06	DEC 06	DEC 06
First Full Rate Production Delivery	FEB 07	FEB 07	FEB 07

b. Previous Change Explanations --

Awarded Phase I/II development, via letter contract, six months earlier than originally planned.

Crusader (AFAS/FARV), December 31, 1995

9c. Schedule (Cont'd):

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

10. Performance Characteristics:

a. Performance --	PE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
AFAS					
Maximum rate of fire (rds/min)	12 for 3-5 mins	12 for 3-5 mins	/ 10 for 3-5 mins	TBD	12 for 3-5 mins
Maximum range assisted (km)	50	50	/ 40	TBD	50
Cross Country Mobility (with rolling resistance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48
Highway Mobility (on level hard surface) (km/hr)	78	78	/ 67	TBD	78
Mean Time Between System Abort/1 (MTBSA) (hrs)	68	68	/ 62	TBD	68
FARV					
Rearm AFAS/3	60 complete rds in less than 12 mins	60 complete rds in less than 12 mins	/ 60 complete rds in 12 mins	TBD	60 complete rds in 12 mins
Cross Country Mobility (with rolling resistance of 90 kg per metric ton) (km/hr)	48	48	/ 39	TBD	48

Crusader (AFAS/FARV), December 31, 1995

10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Highway Mobility (on hard surface road) (km/hr)	78	78 / 67	TBD	78
Mean Time Between System Abort (MTBSA)/1	116	116 / 104	TBD	116

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
a. Cost --			
Development (RDT&E)	2357.0	2357.0	2342.1
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 95 Base-Year \$	2357.0	2357.0	2342.1
Escalation	423.0	423.0	299.0
Development (RDT&E)	(423.0)	(423.0)	(299.0)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2780.0	2780.0	2641.1

Crusader (AFAS/FARV), December 31, 1995

11b. Total Program Cost and Quantity (Cont'd):

	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
b. Quantity --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	0	0	
Procurement	<u>N/A</u>	<u>N/A</u>	
Total	0	0	0

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 04, 1995.

12. Dait Cost Summary:

Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

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Crusader (AFAS/FARV), December 31, 1995

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2780.0	0.0	0.0	2780.0
Previous Changes:				
Economic	-0.3	-	-	-0.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-0.3	-	-	-0.3
Current Changes:				
Economic	-122.8	-	-	-122.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.8	-	-	-15.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-138.6	-	-	-138.6
Total Changes	-138.9	-	-	-138.9
Current Estimate	2641.1	-	-	2641.1

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Crusader (AFAS/FARV), December 31, 1995

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	2357.0	0.0	0.0	2357.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-14.9	-	-	-14.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-14.9	-	-	-14.9
Total Changes	-14.9	-	-	-14.9
Current Estimate	2342.1	-	-	2342.1

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)

N/A -123.1

Economic adjustment for negative program change. (Economic)

N/A +0.3

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+3.8	+4.0
Revision for funding constraints (Estimating)	-18.7	-19.8
RDT&E Subtotal	<u>-14.9</u>	<u>-138.6</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --		Initial Contract Price		
<u>Crusader Ph I/II Develop:</u>		<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
United Defense, Minneapolis, MN				
DAAE30-95-C-0009, CPIF/AF		\$61.4	N/A	0
Award: December 29, 1994				
Definitized: June 22, 1995				
Current Contract Price		Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$148.1	N/A	\$152.1	\$153.4	
		<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances		N/A	N/A	
Cumulative Variances To Date (11/24/95)		\$-5.4	\$-20.3	
Net Change		\$-5.4	\$-20.3	

Explanation of Change:

The performance measurement baseline (PMB) is being incrementally implemented. The change in contract price from \$61.4M to \$148.1M represents the implementation of the next portion of the RA/CM efforts. The remaining two portions of the PMB are anticipated to be implemented during the next reporting period.

Cost variance is primarily attributable to additional efforts needed in requirements analysis and test events encountered in armament maturation (see paragraph 7b). The schedule variance is primarily attributable to the planning required to switch to a solid propellant armament system for Crusader causing inefficiencies in the Requirements Analysis process. The schedule variance will likely result in the System Functional Review (SFR) being rescheduled from

Crusader (AFAS/FARV), December 31, 1995

15. Contract Information (Cont'd):

January 1996 to June 1996. Assuming the Army changes to a solid propellant based Crusader, no impact is anticipated to the cost or schedule APB.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 25.0% (3 yrs/12 yrs)
- (2) Percent Program Cost Appropriated: 9.7% (\$255.1 / \$2641.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2005)	<u>Total</u>
RDT&E	68.8	186.3	258.8	2127.2	2641.1
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	68.8	186.3	258.8	2127.2	2641.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1994				3.8	3.8	3.8	3.8	2.0
1995				63.9	65.0	65.0	65.0	1.9
1996				179.2	186.3	56.5	14.4	2.0
1997				243.6	258.8			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1998				300.5	326.5			2.2
1999				267.5	297.1			2.3
2000				319.1	362.2			2.2
2001				424.5	492.5			2.2
2002				318.7	377.9			2.2
2003				141.6	171.6			2.2
2004				51.7	64.0			2.2
2005				28.0	35.4			2.2
Subtot				2342.1	2641.1	125.3	83.2	
Grand Total				2342.1	2641.1	125.3	83.2	

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

AF-10 JPATS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: JPATS

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Joint Primary Aircraft Training System/JPATS

2. DoD Component: USAF

Joint Participants:
USAF/USN

SAF/PAS

96-129 - T

3. Responsible Office and Telephone Number:

Aeronautical System Center/YT	COL JOHN L. HUDSON
Wright-Patterson AFB	Assigned: July 13, 1994
Dayton, OH 45433-7014	AV (88) 785-2896
COMM (513) 255-2896	

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603208N (Shared)	Project H1150
PE 0604233F (Shared)	Project 654102

PROCUREMENT:

APPN 3010 ICN 0804740P (Air Force)
APPN 1506 ICN 0804745N (Navy)

MILCON:

PE 0804741F, 0805796N

O & M:

PE 0804741F

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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96-C-0292

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4. Program Elements/Procurement Line Items (Cont'd):

RDT&E PROGRAM ELEMENT: 64233F FY94 and prior: Project 644102

5. Related Programs:

None.

6. Mission and Description:

The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN program to replace USAF's T-37B aircraft, USN's T-34C aircraft, and their associated Ground Based Training Systems (GBTS). The aircraft and GBTS will be used to train entry-level students in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, navigators, and Naval Flight Officers.

The program includes the purchase of aircraft, simulators, and associated ground-based training devices, training management system, instructional courseware, and logistics support. The USAF will train at 6 bases and the USN at 3 bases. The USAF will have contractor logistics support for the off-aircraft equipment and the GBTS. 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 and GBTS.

7. Program Highlights:

a. Significant Historical Developments --

On 15 Feb 89, the DOD Trainer Masterplan was approved. The strategy includes jointly meeting the Navy and Air Force, near- and long-term, primary aircraft training requirements.

In Dec 90, the Mission Need Statement was validated by the Joint Requirements Oversight Council; it baselined JPATS critical requirements; the Joint Services Operational Requirements Document was published.

In Nov 91, a Memorandum of Agreement was signed by the following: USAF Chief of Staff, USN Chief of Naval Operations, Assistant Secretary of the Air Force (Acquisition) and Assistant Secretary of the Navy for Research, Development and Acquisition, documenting the services agreement to acquire JPATS.

In Jan 92, a Joint Acquisition Strategy Panel was convened. On 29 May 92, the Conventional Systems Committee determined that the program was ready for the Defense Acquisition Board (DAB) review. The Jun 92 DAB was postponed.

In Jun 92, ORD I was signed.

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7a. Program Highlights (Cont'd):

On 19 Jan 93, the DAB conducted a Milestone 0/I Review. Milestone 0 was approved with the Air Force designated lead service. The Acquisition Program Baseline (APB) was also approved on 19 Jan 93. Milestone I was approved contingent upon completion of several actions prior to Request for Proposal (RFP) release. Actions included Under Secretary of Defense for Acquisition USD(A) approval of the Acquisition Strategy Report (ASR).

On 19 May 93, a second DAB was convened. On 7 Jul 93 a new Acquisition Decision Memorandum (ADM) was signed, with the government sequentially selecting the aircraft and the GBTS contractors; however, the aircraft contractor was the prime contractor with the GBTS contractor as the prime's subcontractor. An updated Operational Requirements Document (ORD) II dated 15 Aug 93, was released 3 Jan 94.

In Mar 94, the program's acquisition strategy changed, which resulted in delaying the release of the RFP. A new ASR and APB were approved and implemented. The updated ASR required the prime contractor to conduct the GBTS source selection and subsequently choose the GBTS contractor.

Source Selection began on 18 May 94 with the RFP release to industry. The flight evaluation phase of source selection began on 24 Jul 94 and was successfully completed on 30 Sep 94.

On 24 Oct 94, the Source Selection Initial Evaluation Briefing was presented to the Source Selection Advisory Council.

On 24 Jan 95, an amendment to the RFP was released to the JPATS contenders. The amendment contained new Air Force and Navy funding profiles. These new funding profiles resulted in a change to the annual procurement quantities. Because of the amendment, the Milestone II and Manufacturing Development Contract award dates slipped from Feb 95 to Aug 95.

b. Significant Developments Since Last Report --

On 22 Feb 95, a Program Deviation Report and a Baseline Change Request were submitted to the PRO. The Baseline Change Request recommended a delay in submitting a new program baseline until after the DAB in Aug 95.

The Source Selection Authority was briefed on 20 Jun 95. The JPATS competition winner was announced on 22 Jun 95 by the Secretary of the Air Force. Protests were filed following the announcement; contract award was delayed. No changes to the baseline or updates to the current estimates could be made until after all protests were

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7b. Program Highlights (Cont'd):

resolved.

The JPATS Milestone II DAB Readiness Review was conducted on 4 Aug 95. A paper DAB was approved by USD(A) A&T. All DAB documentation was approved and the ADM was signed on 9 Aug 95 allowing the JPATS contract award to proceed once the protest(s) were resolved.

JPATS was redesignated an Acquisition Category 1C program.

On 22 Nov 95, the General Accounting Office (GAO) released its decision on the Rockwell protest. All Rockwell allegations were denied.

The JPATS program will satisfy mission requirements.

c. Changes Since As Of Date --

On 5 Feb 96, the GAO released its decision on the Cessna protests. All Cessna allegations were denied.

On 5 Feb 96, Beech Aircraft Corporation was awarded the JPATS Lot 1 contract and the CLS contract.

On 14 Feb 96, the first production lot (Lot 2) option was exercised. It provides for the first 3 production aircraft.

8. Threshold Breaches:

There are no breaches to the approved APB dated 4 Aug 95 and no Numm-McCurdy unit cost breaches.

Demonstrated performance in Section 10a. is TBD as contract award did not occur until 5 Feb 96.

9. Schedule:

a. Milestones --

	<u>Planning Estimate</u>	<u>Approved Program:DE</u>	<u>Current Estimate</u>
Milestone 0/I	JAN 93	N/A	JAN 93
Milestone II	JUN 94	N/A	AUG 95
Manufacturing Development Contract Award	JUL 94	N/A	N/A (Ch-01)
Aircraft Preliminary Design Review (PDR)	DEC 94	N/A	N/A (Ch-01)
Low Rate Initial Production Option (LRIP) Exercise Award	FEB 95	N/A	N/A (Ch-01)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Planning Estimate	Approved Program:DE	Current Estimate
GBTS Contract Award	FEB 95	N/A	N/A
Full Rate Production Contract Award	JUL 98	N/A	N/A (Ch-01)
Aircraft Critical Design Review (CDR)	JUN 95	JUN 96	DEC 96 (Ch-02)
Operational Flight Trainer (OFT) PDR	AUG 95	N/A	N/A
Operational Flight Trainer CDR	FEB 96	N/A	N/A
DT&E			
Start	SEP 96	N/A	N/A
Finish	FEB 97	N/A	N/A
First Aircraft Delivery (AF)	MAR 97	N/A	N/A (Ch-01)
Multi-Service Operational Test & Evaluation (MOT&E)			
Start	NOV 97	N/A	N/A
Finish	MAR 98	N/A	N/A
DD 250 of T-1 (Test Aircraft)	N/A	MAY 98	NOV 98 (Ch-03)
Milestone III	JUN 98	SEP 99	DEC 99 (Ch-02)
OFT First Delivery (Randolph APB)	JUL 98	N/A	N/A
OFT DT/OT&E			
Start	FEB 98	N/A	N/A
Finish	JUL 98	N/A	N/A
Initial Operational Capability (AF)	MAR 00	FEB 01	AUG 01 (Ch-02)
Full Operational Capability (AF)	SEP 07	N/A	N/A (Ch-01)
Initial Operational Capability (Navy)	APR 03	JUL 03	JUL 03 (Ch-02)
Full Operational Capability (Navy)	SEP 10	N/A	N/A (Ch-01)

b. Previous Change Explanations --

Initial Operational Capability (IOC) (AF) changed from Mar 00 to Aug 00; reduction in an upfront buy profile caused insufficient quantity to meet the Mar 00 IOC.

Milestone O/I was approved Jan 93; upon completion of action items Milestones I would be approved. These items were completed May 93.

Change in acquisition strategy: The JPATS acquisition strategy was reviewed at the second DAB on 19 May 93. A 7 Jul 93 ADM was issued, changing the acquisition strategy and requiring a revised Milestone Schedule. JPATS submitted a revised APB as of 25 Feb 94.

The JPATS' schedule slipped due to changes in the Air Force/Navy funding profiles and procurement buy quantities, and the release of an amendment to the RFP. Changes in the funding profiles for both services resulted in reductions in yearly procurement quantities. These reductions slowed JPATS' original ramp-up rates; thus, reducing

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9b. Schedule (Cont'd):

deliveries and causing all Air Force and Navy milestone dates to slip. The release of the MR on 24 Jan 95 resulted in the Milestone II and Manufacturing Development Contract award dates to slip from a Feb 95 award date to an Aug 95 award date.

The 17 May 94 APB reflects these stub-items as additional milestones. Due to the approval of the 17 May 94 APB, the following items were also considered program milestones: GBTS System Integration Review (SIR), Aircraft Multi-Service Operational Test & Evaluation (MOT&E) Start/Finish, GBTS System Level Formative Evaluation (SLFE) Start/Finish, and GBTS Aircrew Training Devices (ATD) First Deliveries.

The milestone GBTS Contract Award was replaced by milestone GBTS Contract Change Proposal.

The milestone Operational Flight Trainer CDR was replaced by milestone GBTS System Integration Review (SIR).

The milestones DT&E Start/Finish were replaced by milestones Aircraft OT&E Start/Finish.

The milestone OFT First Delivery (Randolph AFB) was replaced by milestone GBTS Aircrew Training Devices (ATD) First Deliveries.

The milestones OFT DT/OT&E Start/Finish were replaced by milestones GBTS System Level Formative Evaluation (GBTS DT/OT&E) Start/Finish.

The milestones Multi-Service Operational Test & Evaluation (MOT&E) Start/Finish were replaced by milestone Aircraft Multi-Service Operational Test and Evaluation Start/Finish.

The milestone Operational Flight Trainer (OFT) PDR is no longer considered a milestone and was not replaced by an additional milestone. Due to acquisition reform and streamlining, the JPATS contractor will now determine the design at component level. The focus changed from a component level review to a system level review. The GBTS System Integration Review complies with the intent of this requirement as stated in the Integrated Master Plan.

c. Current Change Explanations --

(Ch-01): The Program Office no longer tracks these as APB milestones. The approved APB resulting from the approval of Milestone II, dated 4 Aug 95, omitted these milestones.

(Ch-02): Aircraft Critical Design Review, Milestone II, Initial Operational Capability (AF) and Initial Operational Capability (Navy)

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9c. Schedule (Cont'd):

Milestone dates changed from the Planning Estimate to the Approved Program;DE due to the source selection. The change from the Approved Program;DE to the Current Estimate results from the delay in contract award because of multiple protests filed with the GAO.

(Ch-03): This is a new schedule milestone approved in the 4 Aug 95 APB.

d. References --

Planning Estimate:

Program Management Directive 1104(12)
/0604233F/0604227F/0804740F/0804741F/0804748F, 18 Mar 92.
Operational Requirements Document dated 3 Apr 92.

Approved Program;DE:

DAE Approved Acquisition Program Baseline dated August 04, 1995.

10. Performance Characteristics:

a. Performance --	PE	Approved Program;DE Objective/Threshold		Demonstrated Perf	Current Estimate
Syllabus Maneuvers Mission Profiles (Contact, Familiarization, Precision Aerobatics, Instrument, and Navigation - High and Low)	Accomplish all five mission profiles	Accomplish all five mission profiles	/ Accomplish all five mission profiles	TBD	Accomplish all five mission profiles
Sustained Speed at 1000 ft MSL, hot day (KTAS)	270	270	/ 250 (270 Dash)	TBD	250 (270 Dash)
Operational G Envelope (Gs)	+7 to -3 symmetric	+7 to -3 symmetric	/ +6 to -3 symmetric; +4 to 0 asymmetric	TBD	+6 to -3 symmetric; +4 to 0 asymmetric
Pressurization (PSI Differential)	5.0	5.0	/ 3.5	TBD	3.5
Bird Strike Capability (4 lb bird, no catastrophic damage) (KTAS)	Max Low Level Airspeed	Max Low Level Airspeed	/ 270	TBD	270

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10a. Performance Characteristics (Cont'd):

	PE	Approved Program;DE Objective/Threshold	Demon- strated Perf	Current Estimate
Ejection Seat with Survival Kit (Altitude/Airspeed in Knots)	0/0	0/0 / 0/60	TBD	0/60
Able To Perform an Engine Out Landing	Unpre- pared surface	Unpre- pared surface / Runway	TBD	Runway
Anthropometric Accommodation (Sitting Height in inches)	32.4 to 41.4	31.0 to 40.0 / 32.8 to 40.0	TBD	32.8 to 40
Able to be Flown Operationally from Either Cockpit	Inter- change- able Instruc- tor/ Student	Inter- change- able Instruc- tor/ Student / Yes	TBD	Yes
Stepped Tandem	0 Degree Over-the- -Nose Visi- bility from the Rear Cockpit at Design Eye Height	0 Degree / Yes Over-the- -Nose Visi- bility from the Rear Cockpit at Design Eye Height	TBD	Yes
Exterior Noise	FAR Part 36, Most Restric- tive App- licable Standard	FAR Part / FAR Part 36, Most Restric- tive App- licable Standard	TBD	FAR Part 36, Most Restric- tive App- licable Standard
Takeoffs/Touch & Go/Land (Wx, Weight, Configuration) at Main Operating Bases (Runway Length - FT)	4000	4000 / 5000	TBD	5000

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10a. Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program;DE Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
IFR Certified Instrumentation	All Digital except Backups	All Digital except Backups	/ IFR Certified (Selectable EADI/EHSI)	TBD	IFR Certified (Selectable EADI/EHSI)
Visual System (GBTS)	Yes	Yes	/ Yes	TBD	Yes

b. Previous Change Explanations --

There has been a change to the Anthropometric Accommodation (Sitting Height in Inches) parameter from 34 to 40 inches, to 32.8 to 40 inches. The new requirement complies with the 7 Jul 93 ADM direction to accommodate not less than 80% of population of eligible women.

An administrative error was made in the Performance Characteristics section of the APB. The IFR Certified Instrumentation in ORD I and ORD II is IFR Certified (Selectable EADI/EHSI) not IFR Certified (Selectable ADI/HSI).

c. Current Change Explanations --

Demonstrated Performance is TBD due to recent contract award (5 Feb 96).

There are no Current Change Explanations required.

d. References --

Planning Estimate:

Program Management Directive 1104(12)
/0604233F/0604227F/0804740F/0804741F/0804748F, 18 Mar 92.
Operational Requirements Document dated 3 Apr 92.

Approved Program;DE:

DAE Approved Acquisition Program Baseline dated August 04, 1995.

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11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	<u>Planning</u>	<u>Approved</u>	<u>Current</u>
	<u>Estimate</u>	<u>Program/DE</u>	<u>Estimate</u>
Development (RDT&E)	229.3	298.5	293.5
Procurement	0.0	2261.3	2276.0
Navy			(747.3)
Air Force			(956.8)
Total Flyaway	(0.0)		(1704.1)
Navy GBTS			(148.1)
Air Force GBTS			(190.6)
Navy Mission Support			(14.8)
Air Force Mission Support			(27.2)
Air Force Other Support			(19.9)
Navy Other Support			(5.2)
Total Other Wpn Sys	(0.0)		(405.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(166.1)
Construction (MILCON)	0.0	56.0	62.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 91 Base-Year \$	229.3	2615.8	2632.0
Escalation	48.0	1434.8	1031.8
Development (RDT&E)	(48.0)	(64.8)	(58.3)
Procurement	(0.0)	(1342.1)	(952.0)
Construction (MILCON)	(0.0)	(27.9)	(21.5)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	277.3	4050.6	3663.8

The Air Force and Navy are currently updating the MILCON estimates to reflect accelerating the program.

b. Quantity --

Development (RDT&E)	2	1	1
Procurement	<u>N/A</u>	<u>711</u>	<u>711</u>
Total	2	712	712

JPATS' RDT&E aircraft is fully configured.

The Low Rate Initial Production (LRIP) quantities authorized by the Milestone II ADM (9 Aug 95) are up to a maximum of 108 aircraft (through Lot 7). LRIP establishes an initial production base and permits an orderly increase in the production rate to lead to full-rate production upon successful completion of operational testing. Milestone III is scheduled to occur before the exercise of Lot 7. If Milestone III is delayed and the Lot 7 option cannot be exercised on time, a break in the production line could occur. However, to mitigate any schedule risk, approval through Lot 7 was

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11b. Total Program Cost and Quantity (Cont'd):

sought and approved at Milestone II. Including the Lot 7 quantities in the LRIP authorization will exceed the 10% quantity threshold normally established for LRIP. However, approval at this time provides the program office latitude to manage risk. Given the pilot program status, a management reserve in the schedule is reasonable. The program office will execute subsequent production contracts for the remaining aircraft with a maximum anticipated production rate of five per month.

Due to the recent reductions to procurement funding, target quantities for the Air Force in FY01 and for the Navy in FY00 and FY01 cannot be procured. In FY01, the Air Force can procure 27 aircraft, which is 3 less than the target quantity. The Navy can procure 7 aircraft in FY00, which is 1 less than target, and 22 aircraft in FY01, which is 2 less than the target quantity.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Planning Estimate:

Program Management Directive 1104(12)
/0604233F/0604227F/0804740F/0804741F/0804748F, 18 Mar 92.
Operational Requirements Document, dated 3 Apr 92.

Approved Program:DE:

DAE Approved Acquisition Program Baseline dated August 04, 1995.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>ICR Baseline</u> (AUG 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY91\$)	2632.0	2615.8	
(2) Quantity	712	712	
(3) Unit Cost	3.697	3.674	0.62

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>DCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY91\$)	2276.0	2261.3	
(2) Quantity	711	711	
(3) Unit Cost	3.201	3.180	0.65

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	277.3	0.0	0.0	277.3
Previous Changes:				
Economic	-8.5	-	-	-8.5
Quantity	-	-	-	-
Schedule	+1.2	-	-	+1.2
Engineering	-	-	-	-
Estimating	+65.1	-	-	+65.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+57.8	-	-	+57.8
Current Changes:				
Economic	-11.7	-356.9	-7.2	-375.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	28.4	72.4	7.3	+108.1
Other	-	-	-	-
Support	-	-90.9	-	-90.9
Subtotal	+16.7	-375.4	+0.1	-358.6
Total Changes	+74.5	-375.4	+0.1	-300.8
Adjustments	-	+3603.4	+83.9	+3687.3
Current Estimate	351.8	3228.0	84.0	3663.8

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1991 Constant (Base-Year) Dollars in Millions)

	RDTE&E	PROC	MILCON	TOTAL
Planning Estimate	229.3	0.0	0.0	229.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	+0.9	-	-	+0.9
Engineering	-	-	-	-
Estimating	+44.1	-	-	+44.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+45.0	-	-	+45.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	19.2	61.4	6.5	+87.1
Other	-	-	-	-
Support	-	-46.7	-	-46.7
Subtotal	+19.2	+14.7	+6.5	+40.4
Total Changes	+64.2	+14.7	+6.5	+85.4
Adjustments	-	+2261.3	+56.0	+2317.3
Current Estimate	293.5	2276.0	62.5	2632.0

b. Previous Change Explanations --

RDTE&E

Economic: Air Force Revised Economic Escalation Indices.
Navy Revised Economic Escalation Indices.

Schedule: Air Force Revised Acquisition Strategy.

Estimating: Refinement of Program Estimate.
Air Force Refined Estimate, ORD II refined the GBTS requirements.
Air Force Adjustment for Current & Prior Inflation.

Navy Decreased effort by removing R&D Aircraft, Mission Support Only.

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13b. Cost Variance Analysis (Cont'd):

Navy Adjustment for Current & Prior Inflation.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-11.7
Adjustment to Navy for Current and Prior Inflation. (Estimating)	+0.1	+0.1
Adjustment to Navy to realign funding with program requirements (Estimating)	+5.9	+7.5
Adjustment to Air Force for Current and Prior Inflation. (Estimating)	+1.5	+1.7
Adjustment to Air Force to realign funding with program requirements. (Estimating)	+12.5	+20.0
Air Force directed reduction to FY96 appropriated amount. (Estimating)	-0.8	-0.9
RDT&E Subtotal	<u>+19.2</u>	<u>+16.7</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-368.8
Economic adjustment for negative program change. (Economic)	N/A	+11.9
Adjustment for Air Force Current and Prior Inflation. (Estimating)	+1.5	+1.0
OSD Withhold of Air Force FY95 & FY96 funds. (Estimating)	+43.3	+49.9
SAF/AQ Procurement Reduction. (Estimating)	-8.6	-11.0
Adjustment to Air Force to realign funding with program requirements. (Estimating)	+25.2	+31.7
Adjustment to Navy Initial Spares to correct a spreadsheet error in the calculation of spares. (Support)	-18.2	-29.0
Adjustment to Navy Mission Support to realign funding with requirements. (Support)	+5.2	+7.4
Adjustment for Navy Current and Prior Inflation. (Support)	+0.2	+0.2
Adjustment to Air Force Initial Spares to correct a spreadsheet error in the calculation of spares. (Support)	-58.8	-96.0

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment to Air Force to realign GBTS to accommodate closure of Reese AFB which resulted in a change in and acceleration of the training device mix at the remaining bases. (Support)	+29.4	+36.1
Adjustment to Air Force Mission Support to realign support with the last delivery. (Support)	-4.5	-9.6
Procurement Subtotal	<u>+14.7</u>	<u>-375.4</u>
 (3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-7.2
Adjustment to Navy to realign funding with requirements. (Estimating)	+3.8	+5.4
Adjustment to Air Force to realign funding with requirements. (Estimating)	+2.7	+1.9
MILCON Subtotal	<u>+6.5</u>	<u>+0.1</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
138.7	-0.5	-133.1	--	--	0.2	--	-0.1	-133.5	5.1

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
JPATS: Beech Aircraft Corp, Wichita, KS F33657-94-C-0006, FPIF Award: February 5, 1996 Definitized: February 5, 1996	\$84.8	\$101.0	1

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
N/A	N/A		N/A	N/A

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 21.7% (5 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 5.9% (\$216.9 / \$3663.8)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2014)	<u>Total</u>
RDT&E	49.4	45.7	66.5	190.2	351.8
Procurement	92.6	29.2	67.2	3039.0	3228.0
MILCON	-	-	3.6	80.4	84.0
O&M	-	-	-	-	-
Total	142.0	74.9	137.3	3309.6	3663.8

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY91 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Encl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1994			3.3	3.3	3.6	3.6	3.4	2.0
1995			3.4	3.4	3.8	3.6	2.1	1.9
1996			1.5	1.5	1.7	0.3		2.0
1997			1.7	1.7	2.0			2.2
1998			2.9	2.9	3.5			2.3
1999			4.4	4.4	5.3			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)	
		Nonrec	Rec		Program	Obliga- gated		Ex- pended

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

2000			2.9	2.9	3.6		2.2
2001			0.7	0.7	0.9		2.2
Subtot			20.8	20.8	24.4	7.5	5.5

Obligations and expenditures reflect program office information as of 20 Feb 96.

Appropriation: 1506 Aircraft Procurement, Navy

2000	8		15.2	25.5	32.7		2.2
2001	24		45.0	59.8	78.3		2.2
2002	24		56.2	76.5	102.4		2.2
2003	24		55.4	81.6	111.5		2.2
2004	24		54.7	72.4	101.1		2.2
2005	24		54.1	70.5	100.7		2.2
2006	24		53.8	69.2	101.1		2.2
2007	24		53.5	69.8	104.1		2.2
2008	24		53.3	76.3	116.4		2.2
2009	24		53.0	72.8	113.4		2.2
2010	24		52.9	70.5	112.3		2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy (Cont'd)

2011	24		52.9	70.6	114.8			2.2
2012	24		52.9	66.5	110.6			2.2
2013	24		52.7	59.5	101.2			2.2
2014	19		41.7	47.2	82.0			2.2
Subtot	339		747.3	988.7	1482.6			

Appropriation: 1205 Military Construction, Navy

2000				2.9	3.7			2.2
2001				20.4	26.5			2.2
2002				3.5	4.7			2.2
2003				6.2	8.4			2.2
2004								2.2
2005								2.2
2006								2.2
2007				7.6	11.3			2.2
2008				2.2	3.4			2.2
2009								2.2
2010								2.2

JPATS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2011				0.6	0.9			2.2
Subtot				43.4	58.9			
Navy	339		768.1	1052.9	1565.9	7.5	5.5	

Appropriation: 3600 Research, Development, Test + Eval, AF

1992			1.0	1.0	1.1	0.9	0.9	2.8
1993			1.8	1.8	1.9	1.9	1.9	2.7
1994			2.9	2.9	3.2	2.6	2.1	2.0
1995			32.1	32.1	35.8	15.5	1.8	1.9
1996			38.6	38.6	44.0	0.6	0.1	2.0
1997			55.4	55.4	64.5			2.2
1998			51.3	51.3	61.1			2.3
1999			37.0	37.0	45.0			2.2
2000			20.3	20.3	25.2			2.2
2001			11.7	11.7	14.9			2.2
2002			1.6	1.6	2.1			2.2
2003			1.6	1.6	2.1			2.2
2004			1.5	1.5	2.1			2.2

JPATS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Monrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2005			1.6	1.6	2.2		2.2
2006			1.6	1.6	2.3		2.2
2007			1.6	1.6	2.3		2.2
2008			1.6	1.6	2.4		2.2
2009			1.7	1.7	2.5		2.2
2010			1.6	1.6	2.5		2.2
2011			1.6	1.6	2.6		2.2
2012			1.6	1.6	2.6		2.2
2013			1.5	1.5	2.5		2.2
2014			1.5	1.5	2.5		2.2
Subtot	1		272.7	272.7	327.4	21.5	6.8

Obligations and expenditures reflect program office information as of 5 Feb 96.

Appropriation: 3010 Aircraft Procurement, Air Force

1995	3		72.2	80.7	92.6	43.9	1.9
1996	3		23.9	24.9	29.2		2.0
1997	12		51.9	56.0	67.2		2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

1998	18		51.4	54.9	67.3			2.3
1999	18		49.2	87.3	109.4			2.2
2000	24		53.0	83.0	106.3			2.2
2001	30		58.2	81.9	107.2			2.2
2002	36		84.2	117.7	157.5			2.2
2003	36		82.9	172.3	235.6			2.2
2004	36		81.8	122.8	171.5			2.2
2005	36		81.1	97.6	139.4			2.2
2006	36		80.5	91.6	133.7			2.2
2007	36		80.3	91.1	135.9			2.2
2008	36		79.6	90.7	138.3			2.2
2009	12		26.6	31.2	48.6			2.2
2010				1.8	2.8			
2011				1.8	2.9			
Subtot	372		956.8	1287.3	1745.4	43.9		

Obligations and expenditures reflect program office information as of 14 Feb 96.

JPATS, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY91 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nourec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3300 Military Construction, Air Force

1997				3.0	3.6			2.2
1998								2.3
1999				3.1	3.9			2.2
2000				3.9	4.9			2.2
2001								2.2
2002								2.2
2003				3.2	4.3			2.2
2004				2.7	3.8			2.2
2005								2.2
2006				3.2	4.6			2.2
Subtot				19.1	25.1			
USAF	373		1229.5	1579.1	2097.9	65.4	6.8	
Grand Total	712		1997.6	2632.0	3663.8	72.9	12.3	

JPATS, December 31, 1995

17. Production Rate Data:

a. Deliveries to Date -- 0/0.

Footnote: Design to Cost goals were not established at the Milestone II decision. Design to cost is inappropriate as the JPATS aircraft is based on an existing aircraft design.

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The operations and support costs are based on the purchase of 711 aircraft as well as Aircrew Training Devices (ATD), Training Integration Management System (TIMS), development and conversion courseware, and CLS which will be provided by Raytheon Aerospace.

Section 18b consists of five elements. Mission Personnel includes the cost of military and civilian system-related personnel involved in the operation of this system. Unit-Level Consumption includes the cost of fuel resources and unit level consumables. Sustaining Support includes the costs of replacement support equipment, modification kits, sustaining engineering, software maintenance, and simulator operations for the aircraft system. Indirect Support includes the costs of personnel support for specialty training, permanent changes of station and medical care. Finally, Program Management includes the cost of managing the system by the Air Force Flight Training System Program Office.

Section 18c consists of costs for contract labor, materials, and overhead incurred in providing the logistics support required by an aircraft system, subsystem or associated support equipment. Aircraft CLS covers depot maintenance for both the Air Force and the Navy, and covers organizational and intermediate maintenance activities for the Navy. GBTS CLS support is provided separately.

Typically, CLS is estimated in Base Year (BY) and not converted to Then Year due to the length of the O&S support relative to the number of years for which inflation indices are available. Due to the lack of inflation indices through 2038, the dollar amounts in this section are in BY91.

This reflects the information briefed by the OSD Cost Analysis Improvement Group at the DAB reflecting the JPATS Most Probable Life Cycle Cost documenting the Source Selection dated 25 Jul 95.

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10b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1991 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per JPATS PROGRAM	Avg Annual Cost Per *
MISSION PERSONNEL	77.5	N/A
UNIT-LEVEL CONSUMPTION	14.3	N/A
SUSTAINING SUPPORT	4.5	N/A
INDIRECT SUPPORT	32.0	N/A
PROGRAM MANAGEMENT	5.4	N/A
Total	133.7	N/A

* 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.

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Aircraft CLS	---	---	---	2892.1	2892.1
GBTS CLS	---	---	0.5	2293.7	2294.2
Total	---	---	0.5	5185.8	5186.3

NOTE: THESE COSTS ARE PROVIDED IN BY91.

CLS AIRCRAFT COSTS ASSOCIATED WITH FY95 THROUGH FY97 ARE NOT DETAILED AS COSTS ROUND TO < .1.

N-21 STRATEGIC SEALIFT

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: SEALIFT

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
STRATEGIC SEALIFT

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

PMS 385 STRATEGIC SEALIFT PROGRAM	R. S. LISIENSKI
NAVAL SEA SYSTEMS COMMAND	Assigned: June 5, 1995
2531 JEFFERSON DAVIS HWY	AV 332-2003/7881
ARLINGTON, VA 22242-8160	COMM 703-602-2003/7881

4. Program Elements/Procurement Line Items:

RDTC#:
PE 0604567N

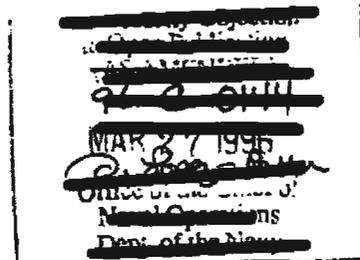
PROCUREMENT:
APFN ICN 4557(NDSF)

MAR 28 1996

National Defense Sealift Fund account executed by the Naval Sea Systems Command under procedures directed by the National Defense Sealift Fund Charter dated October 15, 1994. This SAR addresses the Sealift Ship Acquisition Program financed by the NDSF.

5. Related Programs:
NONE

*** UNCLASSIFIED ***



96-C-0444

SEALIFT, December 31, 1995

6. Mission and Description:

To carry Army equipment for afloat prepositioning and to transport ARMY/USMC or other services surge equipment to include wheeled/tracked vehicles, helicopters and cargo from CONUS to contingency area.

7. Program Highlights:

a. Significant Historical Developments --

The JCS Mobility Requirement Study (MRS) defined overall Strategic Sealift requirements. The Operational Requirements Document (ORD) was validated by the Joint Requirement Oversight Council on June 18, 1992, and updated September 14, 1992 and January 25, 1994. The Acting ASN(RD&A) accepted the NPDN of August 17, 1992 as the Milestone I Decision Meeting in his memorandum signed on June 9, 1993. The FY93 Defense Authorization Act established the National Defense Sealift Fund (NDSF) providing \$613M for the fund and transferred previously appropriated Ship Construction, Navy (SCN) dollars in the amount of \$1.875B into the fund. Program was designated ACAT IC by USD(A) on March 5, 1993. Milestone II approval was granted for Conversions on July 30, 1993 and New Construction on August 30, 1993. The Acquisition Program Baseline (APB) was approved on July 20, 1993. MacGregor-NAVIRE (USA) was competitively awarded a FFP/AF contract on March 29, 1993 for procurement of one shipset of Class Standard Equipment (CSE) with options for up to nineteen additional shipsets. On July 30, 1993 Newport News Shipbuilding (NNS) and National Steel and Shipbuilding Company (NASSCO) were competitively awarded FPI without economic price adjustment contracts for detail design and conversion of a total of five foreign built ships (two at NNS and three at NASSCO). On September 2, 1993 Avondale Industries, Inc. (AII) and on September 15, 1993 NASSCO were competitively awarded FPI with economic price adjustment (escalation) contracts for detail design and construction of one ship each with options for five more ships each for a total of 12 new construction ships under contract. After the conversion and new construction awards, it was determined that 19 ships would meet the 5 million square foot requirement. The remaining two hulls are planned to be solicited through limited competition between the two current new construction yards with awards and advance procurement in FY98 and ship construction in FY99. The conversion programs at NNS and NASSCO have respectively experienced a series of delivery schedule extensions which currently range from 14-17 months for all five conversion ships. A letter was submitted to NAVCOMPT (FMS-2) on September 8, 1995 which identified a growth in program funding requirements and is currently under review. Based on anticipated changes in outyear escalation indices, revised funding requirements will be made available to support the FY98 budget submissions.

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7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --

The Avondale option for one additional new construction ship was exercised on December 27, 1995. The third option for four additional ship sets of CSE was exercised on December 21, 1995. The MASSCO new construction option was exercised on January 30, 1996.

The program will satisfy all mission requirements.

c. Changes Since As Of Date --

The MASSCO new construction option was exercised on January 30, 1996.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated September 18, 1995. There are no Wunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
NPDM	AUG 92	AUG 92	AUG 92
Milestone I	SEP 92	SEP 92	AUG 92
CSP/S-24 Conversion Engineering Design Award	OCT 92	OCT 92	OCT 92
CSP/S-24 New Construction Engineering Design Award	NOV 92	NOV 92	NOV 92
Class Standard Equipment Contract Award	MAR 93	MAR 93	MAR 93
Milestone II Conversion	JUN 93	JUN 93	JUN 93
CSP/S-24 Conversion Contract Award	JUL 93	JUL 93	JUL 93
Milestone II New Construction	AUG 93	AUG 93	AUG 93
CSP/S-24 New Construction Contract Award	SEP 93	SEP 93	SEP 93
Conversion Acceptance Trials	NOV 94	FEB 96	FEB 96
OT&E For Conversion	MAY 95	JUN 96	SEP 96(Ch-1)
Organic Support Capability (First Conversion Ship)	NOV 95	JUN 96	SEP 96(Ch-2)
New Construction Acceptance Trials	AUG 97	AUG 97	DEC 97(Ch-3)
IOC (New Construction First Ship Delivery)	OCT 97	OCT 97	JAN 98(Ch-4)
OT&E For New Construction	APR 98	APR 98	AUG 98(Ch-5)
Milestone III (Total Program)	AUG 98	AUG 98	AUG 98
Organic Support Capability (First New Construction Ship)	AUG 98	AUG 98	AUG 98
FOC (New Construction Ships)	JUL 00	JUL 00	JUL 00

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Service Depot Support (Total Program)	SEP 00	SEP 00	SEP 00

Schedule reflects the requirement to complete OPEVAL prior to conducting Milestone III.

b. Previous Change Explanations --

The June 1994 SAR revised the following dates: OT&E for Conversion from May 1995 to June 1996; Organic Support Capability (first Conversion Ship) from November 1995 to June 1996; and FOC (New Construction Ships) from January 2001 to July 2000. The revised APB dated September 18, 1995 revised the Conversion Acceptance Trials from July 1995 to February 1996.

c. Current Change Explanations --

Due to delivery date extensions for the Conversion ships, the OT&E for Conversion will change from June 1996 to September 1996 (CH-1) and the Organic Support Capability from June 1996 to September 1996 (CH-2). The anticipated execution of a maximum-priced omnibus Engineering Change Proposal (ECP) with Avondale by 2nd quarter FY96 will result in an extension to the delivery date by four months for the lead ship. Consequently, the estimated dates for New Construction Acceptance Trials will be adjusted from August 1997 to December 1997 (CH-3), the IOC (New Construction First Ship Delivery) will be adjusted from October 1997 to January 1998 (CH-4), and the OT&E for New Construction will be adjusted from April 1998 to August 1998 (CH-5).

d. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993.

The approved APB below represents the 3rd baseline change to the program.

Approved Program:

Approved Acquisition Program Baseline dated September 18, 1995.

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10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
RO/RO CAPACITY				
Total Cargo:				
(After broken stow)				
(K sqft)				
PREPO	2	2 / 2	TBD	2
SURGE	2	3 / 3	TBD	3
Cargo capacity per ship (K sqft)				
Usable before broken stow)				
New Construction				
SURGE	400	400 / 380	TBD	380
PREPO	350	350 / 300	TBD	300
Conversion				
SURGE	400	400 / 300	TBD	300
PREPO	350	350 / 225	TBD	225
Lift/Cargo Handling Capability				
Crane Sets	2	2 / 2	TBD	2
Stern Ramp	Slewing	Slewing / Slewing	TBD	Slewing
Side Port	2	2 / 2	TBD	2
Cargo Onload/Offload Times (hrs-not to exceed)				
Combined Load/Offload at Pier	N/A	96 / 96	TBD	96
Load at Pier	48	N/A / N/A	N/A	N/A
Offload at Pier	48	N/A / N/A	N/A	N/A
Sustained Speed (knots)	>24	>24 / 24	TBD	24
Range (nm)	17500	17500 / 12000	TBD	12000
Ship Size Limitation	<PANAMAX	<PANAMAX / PANAMAX	TBD	PANAMAX

Nominal capacities, exact square footage and range varies per conversion/new construction design. In all cases the threshold value is not breached.

b. Previous Change Explanations --

The ORD was revised for the second time on January 25, 1994 to reflect a combined time of 96 hours for Onload/Offload.

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10c. Performance Characteristics (Cont'd):

c. Current Change Explanations -- None.

d. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993

The approved APB below represents the 3rd baseline change to the program.

Approved Program:

Approved Acquisition Program Baseline dated September 18, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	39.3	38.1	38.1
Procurement	5654.5	4781.8	4872.8
New Construction Prepo	(2882.7)		(2158.8)
New Construction Surge	(1133.4)		(1291.8)
Conversion	(1638.4)		(1422.2)
Total Sailaway	(5654.5)		(4872.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 92 Base-Year \$	5693.8	4819.9	4910.9
 Escalation	 894.6	 905.2	 900.0
Development (RDT&E)	(0.6)	(1.8)	(1.8)
Procurement	(894.0)	(903.4)	(898.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	6588.4	5725.1	5810.9

The December 1995 SAR reflects the current control of \$5771. The additional requirements (Fact of Life Increases) as reported in the September 1995 SAR will be decreased as a result of FY97 repricing which reflects more favorable outyear escalation indices.

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11b. Total Program Cost and Quantity (Cont'd):

	Development Estimate	Approved Program	Current Estimate
b. Quantity --			
Development (RDTE&E)	0	0	0
Procurement	20	19	19
Total	20	19	19

c. Foreign Military Sales/International Cooperative Programs -- NONE

d. Nuclear Costs -- None.

e. References --

Development Estimate:

Approved Acquisition Program Baseline dated July 20, 1993

Approved Program:

Approved Acquisition Program Baseline dated September 18, 1995.

12. Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (SEP 95 APB)	Percent Change
a. Total Program			
(1) Cost (FY92\$)	4910.9	4819.9	
(2) Quantity	19	19	
(3) Unit Cost	258.47	253.68	1.89
b. Procurement			
(1) Cost (FY92\$)	4872.8	4781.8	
(2) Quantity	19	19	
(3) Unit Cost	256.46	251.67	1.90

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	ROT&R	PROC	MILCOM	TOTAL
Development Estimate	39.9	6548.5	0.0	6588.4
Previous Changes:				
Economic	+1.2	+333.6	-	+334.8
Quantity	-	-351.5	-	-351.5
Schedule	-	+96.4	-	+96.4
Engineering	-	-	-	-
Estimating	-1.2	-688.7	-	-689.9
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-610.2	-	-610.2
Current Changes:				
Economic	-	-49.8	-	-49.8
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-117.5	-	-117.5
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-167.3	-	-167.3
Total Changes	-	-777.5	-	-777.5
Current Estimate	39.9	5771.0	-	5810.9

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	39.3	5654.5	0.0	5693.8
Previous Changes:				
Quantity	-	-238.6	-	-238.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-1.2	-451.9	-	-453.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-1.2	-690.5	-	-691.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-91.2	-	-91.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-91.2	-	-91.2
Total Changes	-1.2	-781.7	-	-782.9
Current Estimate	38.1	4872.8	-	4910.9

The Fact of Life Increases reflected in the previous SAR have been removed. It is anticipated that the amount will be decreased as a result of FY97 repricing which reflects more favorable outyear escalation indices.

b. Previous Change Explanations --

RDT&E

Economic: Change in escalation indices
 Estimating: Adjustment for current & prior inflation

Procurement

Economic: Revised escalation rates
 Quantity: Variance resulted from a decrease of 1 unit and a change in annual procurement buy profile/schedule.

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13b. Cost Variance Analysis (Cont'd):

Schedule: Schedule slippage for conversion ships

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) Procurement

Revised escalation indices (Economic)	N/A	-51.2
Economic adjustment for negative program change (Economic)	N/A	+1.4
Adjustment for Current and Prior Inflation (Estimating)	+2.3	+2.9
Remove Fact of Life Increases reported in the September SAR (Estimating)	-93.5	-120.4
 Procurement Subtotal	<u>-91.2</u>	<u>-167.3</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Initial Est)	Changes								PAUC (Dev Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
329.42	--	--	--	--	--	--	--	--	329.42

b. Current SAR Baseline to Current Estimate --

PAUC (Dev Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
329.42	15.00	-1.16	5.07	--	-42.50	--	--	-23.59	305.84

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15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --			Initial Contract Price		
<u>Class Standard Equip.:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
MacGregor-NAVIRE (USA), Cranford, NJ					
N00024-93-C-2220, FFP/AF			\$13.2	N/A	1
Award: March 29, 1993					
Definitized: March 29, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$119.6	N/A	12	\$119.6	\$119.6	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (10/31/95)			\$3.6	\$-0.9	
Net Change			\$2.0	\$-0.1	
			\$-1.6	\$0.8	

Explanation of Change:

Nothing significant.

The third option for four additional shipsets of CSB was exercised on December 21, 1995. This option resulted in an increase in Price of \$37.2M which will be reported in the next SAR.

<u>CONVERSIONS:</u>			Initial Contract Price		
NASSCO, SAN DIEGO, CA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00024-93-C-2214, FPI 50/50 SHARE			\$632.1	\$761.1	3
Award: July 30, 1993					
Definitized: July 30, 1993					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$684.2	\$821.6	3	\$770.6	\$815.5	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (10/08/95)			\$-85.7	\$-65.9	
Net Change			\$-90.4	\$-70.6	
			\$-4.7	\$-4.7	

Explanation of Change:

The cumulative cost variance of -\$90.4M is almost exclusively due to cost overruns on the TAKR-295 hull. Engineering has experienced cost growth due to update of conversion drawings and other additional workscope identified during detail design and ongoing production efforts. Approximately three-fourths of the current

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18. Contract Information (Cont'd):

increase is due to the continuing production inefficiencies. The cumulative schedule variance of -\$70.6M is driven by production inefficiencies for all three ships.

<u>CONVERSIONS:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
NEWPORT NEWS SHIPBUILDING, NEWPORT NEWS, VA N00024-93-C-2216, FPI 50/50 SHARE Award: July 30, 1993 Definitized: July 30, 1993	\$423.5	\$478.8	2		
	<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$444.8	\$503.0	2	\$503.0	\$503.0
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$-108.6	\$-48.2
Cumulative Variances To Date (10/22/95)				\$-131.7	\$-43.3
Net Change				\$-23.1	\$4.9

Explanation of Changes:

The cumulative cost variance of -\$131.7M is primarily due to cost overruns on the TAKR-296 attributed to poor production (shipboard/manufacturing) efforts. The remaining cost variance increase is attributed to the TAKR-298 and the inefficient production efforts of NNS in completing its pre-undocking efforts. The cumulative schedule variance of -\$43.3M is primarily driven by late material on both hulls and production effort running 3-4 months behind schedule.

The Contractors current estimated price of \$557.3 and the current PNEAC (\$600) exceed the ceiling price.

<u>NEW CONSTRUCTION:</u>			<u>Initial Contract Price</u>		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Target</u>	<u>Ceiling</u>
AVONDALE IND., INC., NEW ORLEANS, LA N00024-93-C-2205, FPI 50/50 SHARE Award: September 2, 1993 Definitized: September 2, 1993	\$262.0	\$303.0	1		
	<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$682.3	\$800.1	3	\$601.9	\$705.2
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$2.1	\$-8.0
Cumulative Variances To Date (10/31/95)				\$-4.0	\$-14.2
Net Change				\$-6.1	\$-6.9

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15. Contract Information (Cont'd):

Explanation of Change:

The cumulative schedule variance of -\$14.9M is due to late drawing deliveries which are impacting production and schedule distortions resulting from changing the production starting point. Avondale has decided to begin production at the ship's mid-body and work forward in lieu of their traditional approach of starting in the machinery spaces. This approach should allow engineering disciplines more time to clean up drawings and minimize the need for rework due to engineering errors.

An option was exercised for an additional ship on December 27, 1995. The increase will be reflected in the April 1996 CPR.

<u>NEW CONSTRUCTION:</u>			<u>Initial Contract Price</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Target</u>	<u>Ceiling</u>
MASSCO, SAN DIEGO, CA				
N00024-93-C-2203, FPI 50/50 share	\$267.1	\$315.8		
Award: September 18, 1993				
Definitized: February 1, 1994				
	<u>Qty</u>		<u>Qty</u>	
	1		1	
	<u>Current Contract Price</u>		<u>Estimated Price At Completion</u>	
	<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$280.6	\$331.4	\$252.5	\$277.0
	<u>Qty</u>		<u>Qty</u>	
	1			
	<u>Previous Cumulative Variances</u>		<u>Cost Variance</u>	
			\$-0.7	\$0.4
	<u>Cumulative Variances To Date (10/08/95)</u>		<u>Schedule Variance</u>	
			\$-3.2	\$-2.8
	<u>Net Change</u>		<u>Net Change</u>	
			\$-2.5	\$-3.2

Explanation of Change:

Nothing significant.

The Cost Performance Report (CPR) reflects one ship. Two additional ships were awarded in October 1994. The recent execution of an omnibus Engineering Change Proposal (ECP) (P00013) to the contract resulted in a revised Target Cost for three ships of \$666.0M and Ceiling Price of \$865.7M. These changes will be reflected in the April 16, 1996 CPR.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 62.5% (5 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 67.7% (\$3934.7 / \$5810.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY92-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-99)</u>	<u>Total</u>
RDTEX	39.9	-	-	-	39.9
Procurement	3298.7	596.1	603.8	1272.4	5771.0
MILCON	-	-	-	-	-
OSM	-	-	-	-	-
Total	3338.6	596.1	603.8	1272.4	5810.9

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY92 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obli- gated</u>	<u>Ex- pended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1992		38.1		38.1	39.9	39.9	39.9	2.8
Subtot		38.1		38.1	39.9	39.9	39.9	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1993	9		2443.7	2195.2	2463.5	2453.7	1161.5	3.2
1994				248.5	288.8	288.4	5.0	4.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1995	2		459.7	459.7	546.4	252.0	70.3	3.8
1996	2		490.7	490.7	596.1	246.3		2.0
1997	2		486.3	486.3	603.8			2.2
1998	2		536.8	536.8	681.4			2.2
1999	2		455.6	455.6	591.0			2.3
Subtot	19		4872.8	4872.8	5771.0	3240.4	1236.8	
Grand Total	19	38.1	4872.8	4910.9	5810.9	3280.3	1276.7	

The appropriation name in Section 16c. should reflect "4557 National Defense Sealift Fund (NDSF)" vice "1611 Shipbuilding and Conversion, Navy".

This SAR reflects current controls vice the Fact of Life increases shown in the September 1995 SAR.

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

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18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

CSP-24. The CSP-24 is prepositioned with military cargo. In Prepositioning Mode, the ship will be deployed with cargo in the holds in a forward area. The cargo hold environmental control system will be used to maintain the cargo holds within the required temperature and humidity range. The ship will be maintained in Full Operating Status (FOS). The ship will participate in occasional fleet exercises. Port facilities may or may not have services such as shore power and steam. For calculating fuel consumption, the ship will not be on shore services and the summer environmental condition is assumed year round. The CSP-24 will operate 33 percent of the time underway and 67 percent of the time in port. While underway, 67 percent of the time the ship will operate at 15 knots and 33 percent of the time will operate at 24 knots.

CSS-24. The CSS-24 is maintained in Reduced Operating Status (ROS). In ROS, the CSS-24 will be maintained without cargo and can be activated within four days (ROS-4). Full crews will be kept on alert and a skeleton crew (approximately 9) will be aboard at all times. For calculating fuel consumption, the ship will be on shore services and the summer environmental condition is assumed 50 percent of the in port and underway periods and assumed to be in the winter environmental condition 50 percent of the in port and underway periods. The CSS-24 will operate 15 percent of the time underway and 85 percent of the time will be in port. While underway, 60 percent of the time will be at 15 knots and 40 percent of the time will be at 24 knots.

During a mobilization (such as, war, crisis, deployment, or redeployment), the CSP-24 and CSS-24 will operate as point-to-point ships. They will transit at maximum attainable speed from port of embarkation to port of debarkation.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CSP-24 Ship	Avg Annual Cost Per CSS-24 Ship
Unit Mission Personnel	6.1	1.6
Unit Level Consumption	4.0	1.6
Depot Maintenance	1.5	1.3
Sustaining Investment	0.2	0.1
Sys & Inventory Mgmt Con	0.1	0.1
Indirect OES	0.9	1.3
Total	12.8	6.0

c. Contractor Support Costs -- None.

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A-23 SMART-T

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 823)

PROGRAM: SMART-T

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

Secure Mobile Anti-Jam Reliable Tactical Terminal

2. DoD Component: Army

Joint Participants:

U.S. Air Force, U.S. Marine Corps, U.S. Navy, Joint Communications Support Element, Other DoD Special Users

3. Responsible Office and Telephone Number:

Project Manager Milstar (Army)	COL Michael R. Mazzucchi
PEO C3 Systems	Assigned: June 30, 1995
ATTN: SFAE-C3S-MSA	AV 992-9767 COMM (908) 532-9367
Fort Monmouth, NJ 07703-5508	

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0303142 (Shared) Project D384, D455, D2PT, D455

PROCUREMENT:

APPN 0300 ICN 1130453BB (DCA/DNA) NAVY SPECIAL FORCES
 APPN 1109 ICN 402700 (Navy) (Shared) USMC Terminal Buy
 APPN 2035 ICN 28612A (Army) (Shared) **
 APPN 2035 ICN BC4002 (Army)
 APPN 3080 ICN 21131F (Air Force) (Shared) **
 APPN 3080 ICN 33601F (Air Force) ***
 APPN 2035 ICN BS9720 (Army)

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4. Program Elements/Procurement Line Items (Cont'd):

*SMART-T FY92 and FY93 R&D funds were part of Project D455, which reflected funding for the four Army Milstar programs. Starting in FY94, SMART-T is funded under Project D384.

**The Joint Communications Support Element (JCSE) requirements are funded with Army and Air Force funds managed by JCSE.

***Air Force ICN 33601F (shared) funds all Air Force Milstar terminal requirements.

5. Related Programs:

Milstar Space and Mission Control Segment Program; M1037 High Mobility Multi-Purpose Wheeled Vehicle (HMMWV)

6. Mission and Description:

This program responds to the Congressional direction to increase the tactical utility of the Milstar System. The SMART-T will provide a range extension capability to the Army's Mobile Subscriber Equipment (MSE). Specifically, it will provide a satellite interface to permit uninterrupted voice/data communication as our advancing forces move beyond the line-of-sight capability of MSE. This program will support Echelons Corps and Below (ECB) as well as special contingency operations. This equipment will communicate at both low and medium data rates. It will provide the security, mobility, and anti-jam capability required to defeat the threat and satisfy the critical need stated above. The SMART-T also will have the inherent capability of low probability of interception and low probability of detection (LPI/LPD) to avoid being targeted for destruction, jamming or eavesdropping. The prime mover will be a High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) which will carry all the electronics, power generation and a self-erectable antenna. Feasibility engineering efforts will be conducted as part of the development program for Demand Assigned Multiple Access (DAMA) capability. The SMART-T program does not replace another; however, it does operationally displace the AN/TSC-85s and 93s (Ground Mobile Forces SHF terminals) at ECB. (The GMF displaced terminals will move to support Echelons Above Corps.)

7. Program Highlights:

a. Significant Historical Developments --

In the National Defense Authorization Act for FY90, Congress directed that the entire Milstar program be restructured to: substantially reduce costs; increase the utility for tactical users; and eliminate unnecessary capabilities for protracted nuclear war fighting missions and operations. This direction/guidance led to a number of actions for improving Force Projection for Command, Control, Communications, Computer and Intelligence (C4I) support to

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7a. Program Highlights (Cont'd):

include the need to develop and procure a new Medium Data Rate (MDR) Secure, Mobile, Anti-jam, Reliable, Tactical Terminal (SMART-T). In a letter to Congress dated 29 January 1991, the Deputy Secretary of Defense outlined to Congress the DoD's plan to restructure the Milstar program, which included acquisition plans for the SMART-T. The Army Operational Requirements Document (ORD) was finalized 10 March 1992. The Army Acquisition Executive (AAE) approved the Acquisition Strategy Report on 8 April 1992. A successful ASARC Milestone II Decision was held on 18 May 1992, allowing the program to proceed into Phase II, Engineering and Manufacturing Development (EMD). The Acquisition Decision Memorandum was signed on 22 May 1992. Subsequently on 27 October 1992, a Milstar Program Review DAB was conducted, which revalidated the ground terminal program requirements. Dual development contracts were awarded on 9 November 1992 to Raytheon Co., Marlborough, MA, and Rockwell International, Richardson, TX. Raytheon completed Hardware Critical Design Review (CDR) in Sep 93, and Software CDR in Mar 94. Rockwell completed Hardware CDR in Jan 94, and Software CDR in Mar 94.

b. Significant Developments Since Last Report --
Medium Data Rate (MDR) communications capability and Mobile Subscriber Equipment (MSE) interoperability were successfully demonstrated as part of the MST-3000 Terminal to Brassboard Payload Interface Test, which ended on 19 Apr 95.

The SMART-T system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
On 19 Jan 96, MG Campbell, Program Executive Officer for Command, Control, and Communications Systems (PEO C3S), reviewed and approved the initiation of Low Rate Initial Production (LRIP) for the SMART-T. As required by the Army Acquisition Executive memorandum of 26 May 92, the Project Management Office (PMO) demonstrated that the program met all Exit Criteria. An installation level Overarching Integrated Product Team (OIPT) supported the review process leading to the approval, as well as assessments from both the US Army Materiel Systems Analysis Activity (AMSAA) and the US Army Operational Test and Evaluation Command (OPTEC).

Project Manager Milstar (Army) together with the Communications -Electronics Command (CECOM) awarded the SMART-T Low Rate Initial Production/Full Scale Production (LRIP/FSP) contract to Raytheon Company (Marlborough, MA) on 7 Feb 96. The LRIP/FSP contract is Firm Fixed Price (FFP) with options for a total of 387 terminals supporting all services and special users. A total of 52 terminals (43 Army) will be procured during LRIP. A successful Milestone III Decision Review will be conducted prior to exercising the first Full

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7c. Program Highlights (Cont'd):

Scale Production (PSP) option in FY99.

8. Threshold Breaches:

There are currently no breaches to the approved Acquisition Program Baseline (APB) dated 22 May 1992 or Nunn-McCurdy Unit Cost Breaches.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
MDR Study	FEB 91	FEB 91	FEB 91
Market Survey	SEP 91	SEP 91	SEP 91
LDR Technology Demonstrated (SCOTT Terminal Acceptance)	DEC 91	DEC 91	DEC 91
Milestone II ASARC Review	MAY 92	MAY 92	MAY 92
Development Contract Award	SEP 92	SEP 92	NOV 92
Preliminary Design Review	JUL 93	JUL 93	MAY 93
Critical Design Review	MAR 94	MAR 94	MAR 94
DT&E			
Start	JAN 95	JAN 95	SEP 94
Complete	OCT 95	OCT 95	DEC 95
EDM Deliveries	NOV 95	NOV 95	FEB 96
LRIP Decision	DEC 95	DEC 95	JAN 96 (Ch-1)
Low Rate Production Contract Award	JAN 96	JAN 96	FEB 96 (Ch-2)
FAT			
Start	AUG 97	AUG 97	SEP 97 (Ch-2)
Complete	JAN 98	JAN 98	JAN 98 (Ch-2)
LRIP First Delivery	JAN 98	JAN 98	JAN 98 (Ch-2)
LDR IOT&E			
Start	FEB 98	FEB 98	APR 98
Complete	MAY 98	MAY 98	JUL 98
Milestone III ASARC Review	SEP 98	SEP 98	OCT 98
Full Scale Production Award	NOV 98	NOV 98	NOV 98
MDR FOT&E			
Start	SEP 99	SEP 99	SEP 99
Complete	NOV 99	NOV 99	NOV 99
Terminal IOC 1/	DEC 99	DEC 99	DEC 99

ACRONYMS:

- ASARC - Army Systems Acquisition Review Council
- LDR - Low Data Rate
- MDR - Medium Data Rate
- SCOTT - Single Channel Objective Tactical Terminal
- DT&E - Development Test and Evaluation
- EDM - Engineering Development Model
- LRIP - Low Rate Initial Production

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9a. Schedule (Cont'd):

- FAT - First Article Test
- IOT&E - Initial Operational Test and Evaluation
- FOT&E - Follow-On Test and Evaluation
- IOC - Initial Operational Capability

1/ Date when initial training and provisioning have been completed.

b. Previous Change Explanations --

The Development contracts were awarded in Nov 92 (vs Sep 92). This delay was due to the additional time required to complete source selection evaluation. The delay caused a shift in all subsequent milestones through Milestone III ASARC Review.

Critical Design Review (CDR) changed from December 1993 to March 1994. Initially, credit for having satisfied requirements for CDR and Preliminary Design Review (PDR) was to be taken when the Hardware PDR and CDR were complete. However, it was determined that program status would be more accurately reflected if credit for satisfying PDR and CDR milestones was not claimed until both the Hardware and Software reviews were complete.

c. Current Change Explanations --

(Ch-1) LRIP Decision changed from Feb 96 to Jan 96. On 19 Jan 96, MG Campbell, Program Executive Officer for Command, Control and Communications Systems (PEO C3S) approved the SMART-T program for entry into Low Rate Initial Production (LRIP).

(Ch-2) The following changes resulted from the LRIP/FSP contract award on 7 Feb 96:

a. LRIP Contract Award changed from Mar 96 to Feb 96. On 7 Feb 96, FM Milstar Army and the Communications-Electronics Command (CECOM) awarded a Low Rate Initial Production (LRIP) contract with Full Scale Production (FSP) options to Raytheon Company (Marlborough, MA).

b. First Article Test (FAT) Start/End date changed from Oct 97/Mar 98 to Sep 97/Jan 98. FAT will commence immediately upon receipt of LRIP terminals.

c. LRIP First Delivery changed from Mar 98 to Jan 98. Contractors were given the latitude to propose terminal delivery schedules.

d. References --

Development Estimate:

- AAE Acquisition Program Baseline dated 22 May 1992.
- ASARC ADM Approval for Milestone II dated 26 May 1992.

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9d. Schedule (Cont'd):

Approved Program:

AAE Approved Acquisition Program Baseline dated May 22, 1992.

10. Performance Characteristics:

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
Set-up Benign Environment (min)	30	30 / 30	27	30
Set-up MOPP 4 Gear (min)	45	45 / 45	32	45
Tear-down Benign Environment (min)	30	30 / 30	15	30
Tear-down MOPP 4 Gear (min)	45	45 / 45	18	45
MTBF (hrs) (80%LCL) / (Point estimate)	800	800 / 400	TBD	800/1
Aggregate Data Rate (kbps)	1544	1544 / 1024	1024	1544
Interface Capability Configuration (Full System)	With MSE HMMWV	With MSE / With MSE HMMWV / HMMWV	With MSE HMMWV	With MSE HMMWV
System Weight NTE (lbs) (Integrated on HMMWV)	3177	3177 / 3177	2486	3177
TRANSEC with Over the Air Rekey Capability	Required	Required / Required	Demo'd	Required
Bit Error Rate (BER) Airlift	10 ⁻⁵	10 ⁻⁵ / 10 ⁻³	10 ⁻⁵	10 ⁻⁵
Transportability System Only (By)	UH-60	UH-60 / UH-60	TBD	UH-60
System and HMMWV (By)	CH-47	CH-47 / CH-47	TBD	CH-47
Power Sources Prime (VDC)	28	28 / 28	28	28
Alternate AC Power (VAC) @ 50-60 Hz	110-220	110-220 / 110-220	110-220	110-220
Back-up (Vehicular) (Volts)	20-30	20-30 / 20-30	20-30	20-30

ACRONYMS:

- HMMWV - High Mobility Multi-Purpose Wheeled Vehicle
- LCL - Lower Confidence Level
- min - Minutes
- MOPP - Mission Oriented Protective Posture
- MSE - Mobile Subscriber Equipment
- MTBF - Mean Time Between Failure

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10a. Performance Characteristics (Cont'd):

NTE - Not To Exceed
TRANSEC - Transmission Security

1/ A phased approach was approved to achieve the objective MTBF by FOT&E (ie, 400 hours [point estimate] MTBF by the end of LRIP, and 800 hours MTBF [80% LCL] by FOT&E).

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

AAE Acquisition Program Baseline dated 22 May 1992.
ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated May 22, 1992.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	206.2	206.2	215.6
Procurement	598.2	598.2	605.1
Recurring Rollaway	(397.1)		(377.3)
Other Rollaway	(119.7)		(115.3)
Total Rollaway	(516.8)		(492.6)
Support Cost	(1.9)		(11.7)
Other System Cost	(30.2)		(17.7)
Total Other Wpn Sys	(32.1)		(29.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(49.3)		(83.1)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	804.4	804.4	820.7
 Escalation	 222.8	 222.8	 157.8
Development (RDT&E)	(19.2)	(19.2)	(18.9)
Procurement	(203.6)	(203.6)	(138.9)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1027.2	1027.2	978.5

RDT&E includes funding for Demand Assigned Multiple Access (DAMA) Feasibility Engineering Efforts performed in FY93/94.

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11b. Total Program Cost and Quantity (Cont'd):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>364</u>	<u>364</u>	<u>387</u>
Total	364	364	387

The unit of measure for SMART-T is terminals.

At the Milestone II Decision Review on 26 May 1992, a total of 52 Army and Air Force terminals were approved by the Army Acquisition Executive for Low Rate Initial Production (LRIP). The Army LRIP quantity will satisfy training requirements and equip the Army's Contingency Corps.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AAE Acquisition Program Baseline dated 22 May 1992.
ASARC ADM Approval for Milestone II dated 26 May 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated May 22, 1992.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>DCR Baseline</u> (MAY 92 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY92\$)	820.7	804.4	
(2) Quantity	387	364	
(3) Unit Cost	2.121	2.210	-4.04

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12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY92\$)	605.1	598.2	
(2) Quantity	387	364	
(3) Unit Cost	1.564	1.643	-4.86

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	225.4	801.8	0.0	1027.2
Previous Changes:				
Economic	-3.8	-37.9	-	-41.7
Quantity	-	-21.2	-	-21.2
Schedule	-	+15.4	-	+15.4
Engineering	-	-	-	-
Estimating	-6.1	-89.4	-	-95.5
Other	-	-	-	-
Support	-	+49.9	-	+49.9
Subtotal	-9.9	-83.2	-	-93.1
Current Changes:				
Economic	-4.1	-35.6	-	-39.7
Quantity	-	65.1	-	+65.1
Schedule	-	2.2	-	+2.2
Engineering	17.9	-	-	+17.9
Estimating	5.2	-4.0	-	+1.2
Other	-	-	-	-
Support	-	-2.3	-	-2.3
Subtotal	+19.0	+25.4	-	+44.4
Total Changes	+9.1	-57.8	-	-48.7
Current Estimate	234.5	744.0	-	978.5

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	206.2	598.2	0.0	804.4
Previous Changes:				
Quantity	-	-16.3	-	-16.3
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-10.7	-55.3	-	-66.0
Other	-	-	-	-
Support	-	+32.1	-	+32.1
Subtotal	-10.7	-39.5	-	-50.2
Current Changes:				
Quantity	-	48.7	-	+48.7
Schedule	-	-	-	-
Engineering	15.1	-	-	+15.1
Estimating	5.0	-1.3	-	+3.7
Other	-	-	-	-
Support	-	-1.0	-	-1.0
Subtotal	+20.1	+46.4	-	+66.5
Total Changes	+9.4	+6.9	-	+16.3
Current Estimate	215.6	605.1	-	820.7

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Estimating: FY92 funds turned in (reprogramming action) due to delay in development contract award; funding reduction to accommodate Small Business Innovative Research (SBIR) allocation; FY93-95 funding reductions; funding reduction to accommodate inflation tax allocation; and FY93 unfunded Demand Assigned Multiple Access (DAMA) engineering feasibility efforts. Revised estimate for Current and Prior Inflation offset and to refine Engineering Change Proposals (ECPs). Increased requirements for Joint Staff mandated Joint

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13b. Cost Variance Analysis (Cont'd):

Interoperability Standards, Network Control and Payload Specification changes.

Procurement

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Quantity: JCSE procurement increased from 8 to 10. Army procurement increased from 208 to 209. Air Force appropriation reduction in quantity from 102 to 76 (AF requirements from 97 to 73; JCSE requirements from 5 to 3). Army appropriation reduction from 219 to 217 (JCSE requirements from 5 to 3; Army 209 unchanged; Other DOD Special Users 5 unchanged). Marine Corps appropriation quantity increased from 42 to 48.

Schedule: Annual procurement buy profile changed.

Estimating: FY94-95 funding reductions; and reduction in first unit cost estimate. Refined Engineering Change Proposals (ECPs) due to decrease in funding; shortened system life from 20 to 15 years; and corrected error in Dec 92 SAR (reclassified elements from rollaway to support costs). Air Force appropriation decrease in GFE, recurring engineering, quality control and ECP costs. Marine Corps appropriation decrease in GFE, contractor system project management, quality control and ECP costs. Marine Corps appropriation increase in recurring engineering due to quantity increase. Increased Army GFE costs related to the HMMWV and additional Milstar Intersegment Tests.

Support: Revised initial spares and other weapon system costs. Reduced data costs. Decreased initial spares requirements based on quantity reduction. Additional decrease in estimated data costs.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RD&E</u>		
Revised escalation indices. (Economic)	N/A	-4.1
Adjustment for Current & Prior Inflation. (Estimating)	+1.9	+1.9

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Additional cost for development of Training Interactive Courseware and Automated Communications Management System (ACMS) (Engineering)	+15.1	+17.9
Budget reduction for SBIR and revised economic assumptions-not available for execution. (Estimating)	-0.5	-0.6
Approved reprogramming to continue competitive development program (Estimating)	+3.6	+3.9
RDT&E Subtotal	<u>+20.1</u>	<u>+19.0</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-40.8
Adjustment for Negative Program Change. (Economic)	N/A	+5.2
Adjustment for Current & Prior Inflation. (Estimating)	+1.9	+2.3
Total Variance associated with increase of 42 units (345 to 387 units). Army: 217 to 209; Marines 48 to 48; Air Force 76 to 115; Other DoD 4 to 15	+46.5	+61.7
Quantity Variance resulting from increase of 42 units. (Quantity)	+48.7	+65.1
Allocation of Estimating costs associated with Quantity increase. (Estimating)	-2.2	-4.4
Refinement of Marines estimate for rollaway costs. (Estimating)	+9.1	+11.1
Decrease requirement for non-recurring costs. (Estimating)	-7.4	-9.5
Budget reduction for Other DOD Agencies FY 2002 requirements. (Estimating)	-2.7	-3.5

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment of schedule to reflect new requirements for the contract buy schedule. (Schedule)	--	+2.2
Adjustment for current and prior inflation for Army. (Support)	+0.1	+0.1
Revised initial spares requirements due to quantity increase (Support)	+8.6	+10.9
Refinement and adjustment for Other Support cost estimate. (Support)	-9.7	-13.3
Procurement Subtotal	<u>+46.4</u>	<u>+25.4</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.822	-0.210	-0.054	0.045	0.046	-0.244	--	0.123	-0.294	2.528

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

SMART-T DEV (Raytheon):
 Raytheon Company, Marlborough, MA
 DAAB07-93-C-B751, CPIP
 Award: November 9, 1992
 Definitized: November 9, 1992

Initial Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$35.0	N/A	6

Current Contract Price		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
\$37.8	N/A	6

Estimated Price At Completion	
<u>Contractor</u>	<u>Program Manager</u>
\$54.9	N/A

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	\$0.0	\$0.0
Cumulative Variances To Date	\$	\$
Net Change	\$0.0	\$0.0

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15. Contract Information (Cont'd):

Explanation of Change:

Contractor Estimated Price at Completion: Development contract is complete. Project Management Office (PMO) is currently negotiating final contract close-out costs.

This will be the last time this contract will appear in the SAR. The contract is greater than 90% complete.

Contract performance data has been omitted. This information is procurement sensitive due to the competitive nature of the acquisition strategy (i.e., dual development contractors to compete for LRIP/Production contract).

<u>SMART-T DEV (Rockwell):</u>			<u>Initial Contract Price</u>		
Rockwell, Richardson, TX	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>		
DAAB07-93-C-B752, CPIF W/T&M	\$46.9	N/A	6		
Award: November 9, 1992					
Definitized: November 9, 1992					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$49.9	N/A	6	\$61.9	N/A	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.0	\$0.0	
Cumulative Variances To Date			\$	\$	
Net Change			\$0.0	\$0.0	

Explanation of Change:

Contractor Estimated Price at Completion: Development contract is complete. The Project Management Office (PMO) is currently negotiating final contract close-out costs.

This will be the last time this contract will appear in the SAR. The contract is greater than 90% complete.

Contract performance data has been omitted. This information is procurement sensitive due to the competitive nature of the acquisition strategy (i.e., dual development contractors to compete for LRIP/Production contract).

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 19.2% (5 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 24.2% (\$237.0 / \$978.5)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY92-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2017)	<u>Total</u>
RDT&E	151.1	21.3	17.4	44.7	234.5
Procurement	-	64.6	61.0	618.4	744.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	151.1	85.9	78.4	663.1	978.5

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1992				19.7	20.0	20.0	20.0	3.0
1993				42.5	44.3	44.3	40.9	2.4
1994				53.4	56.7	56.1	46.3	2.0
1995				27.8	30.1	30.1	27.4	1.9
1996				19.2	21.3	5.0	0.1	2.0
1997				15.4	17.4			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$		Excl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1998				24.6	28.5			2.2
1999				0.2	0.2			2.3
2000				3.7	4.5			2.2
2001				3.0	3.7			2.2
2002				3.0	3.8			2.2
2003				3.1	4.0			2.2
Subtot				215.6	234.5	155.5	134.7	

Expenditures and obligations reflect Program Office records as of 31 December 1995.

Appropriation: 2035 Other Procurement, Army

1996	20	16.8	39.1	57.4	64.6			2.0
1997	23	22.4	25.2	39.4	45.4			2.2
1998		16.5		35.2	41.5			2.2
1999	45	16.7	45.6	74.3	89.5			2.3
2000	65	10.9	57.7	72.1	88.7			2.2
2001	56	9.5	59.6	71.0	89.3			2.2
2002		0.7		16.1	20.7			2.2

SMART-T, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2003		0.4		13.0	17.1			2.2
2004		0.2		2.0	2.7			2.2
2005				1.7	2.4			2.2
2006				0.9	1.3			2.2
2007				1.0	1.4			2.2
2008				0.8	1.2			2.2
2009				0.9	1.3			2.2
2010				0.8	1.3			2.2
2011				0.8	1.3			2.2
2012				0.8	1.3			2.2
2013				0.8	1.3			2.2
2014				0.7	1.1			2.2
2015				0.6	1.1			2.2
2016				0.4	0.7			2.2
2017				0.2	0.3			2.2
Subtot	209	94.1	227.2	390.9	475.5			
Army	209	94.1	227.2	606.5	710.0	155.5	134.7	

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16c. Program Funding Summary (Cont'd):

Expenditures and obligations reflect Program Office records as of 31 December 1995

The 2035 appropriation for the U.S. Army reflects a total procurement buy of 209 terminals. When compared to the 31 Dec 94 SAR total of 217, the decrease in terminals is attributable to the transfer of JCSE (3) and Other DOD Special Users (5) to the appropriation category 0300 Procurement, Defense Agencies.

The combined approved U.S. Army and U. S. Air Force Low Rate Initial Production quantity is 52 terminals.

Appropriation: 1109 Procurement, Marine Corps

1999	24	3.5	22.4	32.8	39.5		2.3
2000	18	1.8	15.2	21.6	26.6		2.2
2001	6	0.6	4.7	6.8	8.5		2.2
2002		0.1		0.2	0.3		2.2
2003		0.1		0.2	0.2		2.2
2004		0.1		0.1	0.1		2.2
Subtot	48	6.2	42.3	61.7	75.2		
Navy	48	6.2	42.3	61.7	75.2		

The 1109 appropriation funds the U.S. Marine Corps requirements (48).

Appropriation: 3080 Other Procurement, Air Force

1997	9	1.7	9.4	13.5	15.6		2.2
1998							2.2
1999	20	3.0	18.7	26.5	31.9		2.3
2000	21	2.2	17.7	24.5	30.2		2.2
2001	23	2.3	18.0	25.2	31.7		2.2

SMART-T, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3080 Other Procurement, Air Force (Cont'd)

2002		0.1		0.2	0.2			2.2
2003		0.1		0.2	0.3			2.2
2004	42	3.9	31.5	44.4	59.6			2.2
2005								2.2
2006								2.2
2007		0.1		0.4	0.6			2.2
Subtot	115	13.4	95.3	134.9	170.1			
USAF	115	13.4	95.3	134.9	170.1			

The 3080 appropriation funds the requirements for the U.S. Air Force (115). As compared to the 31 Dec 1994 SAR, terminals for JCSE (3) were transferred to the appropriation 0300 Procurement, Defense Agencies. An additional 42 terminals for U. S. Air Force are planned for FY 2004.

Appropriation: 0300 Procurement, Defense Agencies

1999	2	0.3	1.9	2.7	3.3			2.3
2000	2	0.2	1.7	2.4	3.0			2.2
2001	2	0.2	1.6	2.2	2.8			2.2
2002				0.6	0.8			2.2
2003				0.1	0.1			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0300 Procurement, Defense Agencies (Cont'd)

2004	9	0.8	7.3	9.5	13.1			2.2
2005								2.2
2006								2.2
2007		0.1		0.1	0.1			2.2
Subtot	15	1.6	12.5	17.6	23.2			
DoD	15	1.6	12.5	17.6	23.2			
Grand Total	387	115.3	377.3	820.7	978.5	155.5	134.7	

The 0300 appropriation funds the requirements for U.S. Navy Special Forces (4).

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

- a. Assumptions and Ground Rules --

Based on the SMART-T Program Life Cycle Cost Estimate (PLCCE) dated January 1994, the following assumptions were determined: The conditions under which the SMART-T maintenance costs are calculated include using the annual operating hours per terminal of 2080 hours based on an 8 hour a day 5 day week per operation. Each terminal will require 60 man hours/year of DS/GS maintenance, and 120 man

SMART-T, December 31, 1995

18a. Operating and Support Costs (Cont'd):

hours/year of Service Repairable Area (SRA). Each complete terminal will be overhauled at depot once during its lifetime. This effort will require 240 man hours of effort.

There is no antecedent system.

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Thousands)

Cost Element	Average Annual SMART-T	Avg Annual Cost Per Terminal (Antecedent)
Personnel	36.5	N/A
Replenishment Spares	19.7	N/A
Replen Repair Parts	19.8	N/A
Software	6.6	N/A
Other O&S Costs	6.7	N/A
Total	89.3	N/A

c. Contractor Support Costs -- None.

SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: JSIPS

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
 Joint Service Imagery Processing System (JSIPS) Common
 Imagery Ground Surface System ((CISS))

2. DoD Component: USAF

Joint Participants:
 USMC, Army, and Navy

3. Responsible Office and Telephone Number:
 Electronic Systems Center/ICI Mr Richard Bleau
 Hanscom AFB Assigned: December 1, 1992
 Bedford, MA 01731-5000 AV 478-1186 ext 8048
 COM 617-271-8048

4. Program Elements/Procurement Line Items:

RDTE&E:
 PE 0206625M
 PE 0207217F Project 3652
 PE 0305154D (Shared), 0603261W, 0603730A

PROCUREMENT:
 APPN 1109 ICN 461500 (Navy)
 APPN 1810 ICN 461500 (Navy)
 APPN 2035 ICN BZ7320 (Army)
 APPN 3080 ICN 456GC3453 (Air Force) (Shared)
 APPN 0300 ICN DARO000001 (DCA/D&A) (Shared)

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DIRECTORATE FOR FREEDOM OF INFORMATION
 AND SECURITY REVIEW (OASD-PA)
 DEPARTMENT OF DEFENSE

SAF/PAS

96-041 T

*** UNCLASSIFIED ***

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5. Related Programs:

Tactical Imagery Processing System (commercial utility cargo vehicle); (TIPSC) A unit level Imagery Ground System supporting Navy ATARS testing and development of the USMC Tactical Exploitation Ground (TEG) System. Eagle Vision; Commercial Satellite Imagery Ground Station. Tactical Exploitation Group (TEG); Mobile forward deployed ATARS Electro-Optical/Infra-red (EO/IR) imagery receipt system.

6. Mission and Description:

JSIPS' mission is to provide imagery-derived, time-sensitive, battle management information to the field commanders in near-real-time. JSIPS is the DOD common mobile ground station for processing and exploiting imagery received from a variety of sources. The system employs the following seven functional segments: National Input Segment (NIS), Tactical Input Segment (TIS), Softcopy Exploitation Support Segment (SES), Hardcopy Exploitation Segment (HES), Exploitation Support Segment (ESS), Communication Support Segment (CSS), and System Support Segment (SSS). The SES, ESS and CSS are "Core" segments required for basic system operation. The system, however, is modular in design so that the services (USAF, USMC, USA, and USN) can select the input and processing segments that they require based upon their mission. The Navy elected to use a Tactical Input Segment derivative, called the Navy TIS (N-TIS), to process ATARS imagery from the F/A-18. Other existing shipboard assets (i.e. Digital Imagery Workstation-afloat) were used to satisfy the overall Navy JSIPS requirements.

7. Program Highlights:

a. Significant Historical Developments --

Office of the Secretary of Defense (OSD) instituted the Joint Service Imagery Processing System (JSIPS) program in 1986 to consolidate separate Army, Air Force, and Marine Corps imagery programs. Representatives of the three services signed a memorandum of agreement in January 1987. A Joint Service Operational Requirements Document (JSORD) was signed December 1990. JSIPS was designated as an ACAT 1C program in July 1992. JSIPS was transferred to the Program Executive Officer for C3 programs in July 1992 and became part of the Follow-On Tactical Reconnaissance System (FOTRS) in December 1992.

The Army system was deployed to Mains-Finthen, Germany (October 1990). The system was approved for softcopy exploitation operations in October 1991. Approval for Tactical Radar Correlator (TRAC), ELINT Processing Distribution System (EPDS), and Hardcopy Exploitation Segment (HES) operations was granted in October 1992. On 11 February 1993, the Defense Intelligence Agency granted full approval to operate all JSIPS functions on the Army system deployed at Mains-Finthen, Germany. Final acceptance and delivery of the

JSIPS, December 31, 1995

7a. Program Highlights (Cont'd):

first Army Joint Service Imagery Processing System was accomplished on 1 April 1993. In December 1993, The Army Assistant Secretary for Research, Development and Acquisition officially requested Under Secretary of Defense for Acquisition and Technology (USDA&T) to support termination of the Army participation in JSIPS. A Red Team was established by the Defense Airborne Reconnaissance Office (DARO) to study the problem. The DARO conducted a "Red Team" review to respond to the Army's request to withdraw from the program and to evaluate the (JSIPS) Program Office (JPO's) plan to restructure the program to improve system affordability. The DARO, in coordination with the Joint Requirement Oversight Committee (JROC), developed a plan to migrate the Service's imagery systems to a Common Imagery Ground/Surface System (CIGSS) architecture. The DARO plan was concurred by both the JROC and Defense Airborne Reconnaissance Steering Committee (DARSC) on 1 and 3 November 94. The DARO direction calls for delivering systems in the pipeline, migrating current systems to a common baseline, transitioning JSIPS into the CIGSS and using streamlined acquisition procedures. As a part of this plan the JROC concurred with the Army's request to use the Modernized Imagery Exploitation System (MIES), in lieu of JSIPS. They also accepted a modified USMC Operation Concept which included a single (vice three) JSIPS as a centralized hub for exploitation and dissemination of National Imagery Intelligence Products supported by three Tactical Exploitation Group (TEGs) that provide a tactical capability. The Army elected to defield their JSIPS system in September 94 transferring imagery intelligence production responsibility to the MIES. Some system components (National Input Segment, Satellite Communications, Hardcopy Exploitation Segment, etc.) were retained by the Army. The remainder of the system components (Support Processor Group and Communications Processor Group) were returned to the JSIPS contractor's facility for refurbishment and enhancement to meet 12th AF requirements.

The Marine Corp system was deployed to Eglin AFB Fort Walton Beach, FL in July of 1992 for developmental testing. A successful Advanced Tactical Airborne Reconnaissance System (ATARS) Data Link flight test was conducted in September of 1992. Due to the 25 June 1993 cancellation of the Air Force Advanced Tactical Air Reconnaissance System contract, the Engineering and Manufacturing Development (EMD) strategy was changed to de-couple the National and Tactical portions of the Air Force/Marine Corps system to allow early National system acceptance. The Marine Corps system was moved from Eglin AFB, FL to Camp Pendleton Oceanside, CA during February 1994. The Defense Intelligence Agency (DIA) conducted Security Accreditation testing and granted permission for the system to conduct live operations. The DD-250 was signed during Nov 94 and the system was turned over to the Marine Corps Imagery Support Unit (MCISU).

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7a. Program Highlights (Cont'd):

On 19 February 1993, the Air Force System Acquisition Review Council (AFSARC) authorized the beginning of Low Rate Initial Production (LRIP) to buy the first Air Force production JSIPS. The Air Force Low Rate Initial Production (LRIP) for the JSIPS was awarded on 23 Sep 93. This program proceeded on schedule during 1994. The system is scheduled for activation at the 9th AF Shaw AFB Sumter, SC, May 96.

Efforts started in 1994 to modify the LRIP contract for refurbishment of both the original Army system and Marine Corps system. Both systems will be upgraded to the current 9th AF System configuration. The original Army system will be deployed to the 12th AF Davis-Monthan Tucson, AZ and the Marine Corps system will be upgraded on-site at Camp Pendleton, CA.

The Navy Tactical Input Segment (NTIS) was awarded on 23 Sep 93. System fabrication began in April 94 and was ready for system integration and checkout in November 1994. The System was delivered to the Naval Surface Warfare Center (NSWC) at Dahlgren, Virginia, in March of 1995 for integration and testing with the other Navy JSIPS System components.

A Tactical Exploitation Group (TEG) was identified to satisfy tactical imagery exploitation requirements for the USMC. Three commercial off-the-shelf (COTS) based TEGs will be procured. An Acquisition Strategy was developed during 1994 to obtain an initial prototype system utilizing Navy Air Warfare Center (NAWC) resources at Point Mugu, CA. A separate contract is planned for FY96 for two additional TEGs meeting Common Imagery Ground Surface System (CIGSS) architecture requirements.

The JSIPS prime contractor submitted a series of Claims/Requests for Equitable Adjustment (REAs) totaling \$65.7M at price. An Integrated Product Team (IPT) was established in 1994 to evaluate and negotiate the Claims/REAs with the Contractor.

In July 94 Assistant Secretary of the Air Force (Acquisition) (SAF/AQ) transferred the Designated Acquisition Commander (DAC) responsibility from Aeronautical Systems Center (ASC) to Electronic Systems Center (ESC). On 15 July 1994 ESC/ICI was designated as the Product Group Manager for Reconnaissance/Intelligence Ground Systems. This established a single face to the user within Air Force Materiel Command (AFMC) responsible for the development, procurement and sustainment of all Air Force Recce/Intel Ground Systems.

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7b. Program Highlights (Cont'd):

b. Significant Developments Since Last Report --

The Marine Corps Joint Services Imagery Processing System (JSIPS) at Camp Pendleton, Oceanside, CA. was fully integrated with other on-site intelligence systems. Automatic Digital Network (AUTODIN) connectivity and a Defense Satellite Network Sensitive Compartmented Information (DSNET3) interface were established. A formal fielding decision was made by Major General Mutter, Commander Marine Corps Systems Command (COMMARCORSSYS COM) on September 22, 1995. The JSIPS supported a number of exercises in 1995 including "Kernel Blitz" and "Fort Franklin III".

Fabrication of the 9th Air Force Low Rate Initial Production (LRIP) system is continuing on schedule for delivery to Shaw AFB Sumter, SC. in mid Calendar Year 1996. The National Input Segment (NIS) was delivered and interfaced with the system. Integration of the Softcopy Processor Group (SPG) and Communications Processor Group (CPG) are largely complete and in-plant test activities are proceeding successfully. Personnel from the program office, Headquarters Air Combat Command (HQ/ACC) and 9th AF have participated in a number of site activation working groups in anticipation of fielding the system. A Block upgrade was negotiated in Dec 95 to provide for migration to the Common Imagery Ground Surface Systems (CIGSS) standards and to incorporate National Requests for Changes (RFC's).

A contract modification was accomplished during Sep 95 to provide for the upgrading of both the 12th AF and Marine Corps systems to the 9th AF production baseline.

The Navy Tactical Input Segment (NTIS) engineering development model completed system development and testing and was delivered to the Navy at Naval Surface Weapons Center, Dahlgren, VA in April 95. The system was interfaced with the Digital Imagery Workstation Afloat (DIWSA), another major Navy JSIPS component, and imagery was successfully transferred. On site acceptance testing was also completed and the system will be formally accepted in early Calendar Year (CY) 96. A preliminary NTIS production acquisition strategy was developed in concert with the Navy.

In January 1995 a contract was awarded through the Naval Air Warfare Center (NAWC) for the development of a Tactical Exploitation Group (TEG) prototype. A System Requirements Review and a Design Review were accomplished and the program is on track for a mid Calendar Year (CY) 96 system delivery to the Marine Corps. Also, work has begun on prototyping a downsized common data link for inclusion on the three TEGs.

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7b. Program Highlights (Cont'd):

The Claims/Requests for Equitable Adjustment Integrated Product Team (IPT) established in 1994 settled two of the six claims. Three claims with a value of \$6.8M at price were appealed to the Armed Service Board of Contract Appeals (ASBCA) in May 1995. In November 1995 the Contracting Officer issued a Final Determination on the remaining claim, with a value of \$58.7M at price. The Government and the contractor have placed all four remaining claims in abeyance and agreed to pursue an Alternative Disputes Resolution (ADR) approach for 90 days. The objective of the ADR is to jointly establish a program baseline from which a final settlement can be negotiated.

The Recce/Intel Ground Systems (R/IGS) Product Group, has been involved in many related program activities. The Distributed Common Ground Station (DCGS) concept for the Air Force, combines the Contingency Airborne Reconnaissance System (CARS) and JSIPS systems into an interoperable set of modular, tactical, and deployable segments. The DCGS will provide a standardized common ground station for multi-source intelligence processing, exploitation and dissemination to support combat plans, basing concepts, and the Air Operations Center. A Ground Exploitation System (GES) was integrated to support the Air National Guard's exploitation of imagery acquired from an F-16 reconnaissance pod. The Defense Airborne Reconnaissance Office (DARO) selected Electronic Systems Center (ESC) to integrate a Common Imagery Ground/Surface System (CIGSS) testbed to ensure intelligence system interoperability and compliance with CIGSS standards. DARO also tasked ESC to serve as the executive agent for the acquisition and sustainment of the Common Imagery Processor (CIP), a major Common Imagery Ground/Surface System (CIGSS) component. This effort is being accomplished jointly with the Army. Prototype development will be accomplished by the Army Space Program Office (ASPO) on behalf of the RIGS Product Group Manager.

The program is expected to satisfy all mission requirements.

c. Changes Since As Of Date --

The Navy Tactical Input Segment (NTIS) DD-250 for the Engineering and Manufacturing Development Contract was signed on 6 March 1996.

8. Threshold Breaches:

There are no breaches to the Acquisition Program Baseline (APB) dated January 31, 1995. There is no Nunn-McCurdy unit cost breach.

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9. Schedule:
JSIPS

a. Milestones --	Development Estimate	Approved Program	Current Estimate
Milestone I Decision	N/A	JUL 86	JUL 86
Dem/Val Contract Award	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
EMD Contract Award	N/A	AUG 87	AUG 87
Critical Design Review Complete	N/A	MAR 89	MAR 89
Service Final DT&E (Start)	N/A	NOV 90	NOV 90
USAF LRIP (9th AF) System Decision	APR 93	APR 93	APR 93
USAF LRIP (9th AF) Contract Award	AUG 93	SEP 93	SEP 93
Army System Production Decision	JAN 94	N/A	N/A
USMC LRIP Approval	AUG 94	N/A	N/A
Service Final DT&E (Finish)	N/A	AUG 94	AUG 94
Initial Operational Capability	N/A	DEC 94	DEC 94
USAF LRIP Delivery (First Delivery)	OCT 95	N/A	N/A
USAF Full Rate Decision	JUL 96	N/A	N/A
Navy Subsystem Production Decision	JAN 96	N/A	N/A
USAF LRIP (9th AF) Delivery	N/A	N/A	APR 96

b. Previous Change Explanations --

The Army System Production originally scheduled for Jan 94 was TBD pending a decision on their formal request to withdraw from the joint program. Milestones for USMC LRIP approval and Navy LRIP approval were added to current estimates as of Jun 94 and Oct 95. USMC Full rate decision had slipped from Aug 94 to Aug 95 due to the addition of the USMC LRIP approval. USAF LRIP System delivery had slipped from Oct 95 to Apr 96 due to the USAF LRIP contract not being awarded until Sep 93. Navy Subsystem Production had slipped from Jan 96 to Sep 97 due to the addition of a Navy LRIP approval milestone.

Milestone I,II,EMD Contract Award,CDR Complete,Service Final DT&E(Start) USMC LRIP Approval,IOC and USAF Full Rate Decision were all added to coincide with our proposed baseline.

Due to lengthy negotiations, the LRIP contract award slipped from Aug 93 to Sep 93.

The Army System Production Decision and the USMC LRIP Approval have been deleted because of the restructure of the JSIPS program.

The Tactical requirement for these systems was deferred thereby accelerating the National development schedule for both DT&E and IOC.

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9b. Schedule (Cont'd):

JSIPS

The Navy subsystem milestone has been moved to the Navy TIS Section and renamed Navy TIS Milestone III. The date changed from Sep 97 to Jan 98 to allow time to evaluate the initial system.

USAF LRIP (9th AF) Delivery has been added to reflect the restructure of the JSIPS program.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

a. Milestones --

	Development Estimate	Approved Program	Current Estimate
Milestone I Decision	N/A	JUL 86	JUL 86
Milestone II Decision	N/A	AUG 87	AUG 87
Navy TIS Study	N/A	MAR 91	MAR 91
Navy TIS RMD Decision	N/A	APR 91	APR 91
Navy TIS RMD Contract Award	N/A	SEP 93	SEP 93
Navy TIS RMD Delivery	N/A	SEP 95	MAR 96 (Ch-1)
Navy TIS LRIP Decision	N/A	FEB 96	AUG 96 (Ch-2)
Navy TIS LRIP Contract Award	N/A	MAR 96	SEP 96 (Ch-2)
Navy TIS LRIP Delivery (Initial System)	N/A	SEP 97	MAR 98 (Ch-2)
Navy TIS Milestone III	N/A	JAN 98	JUL 98 (Ch-2)
Navy TIS Production Contract Award	N/A	FEB 98	AUG 98 (Ch-2)

b. Previous Change Explanations --

The Navy TIS LRIP decision changed from Oct 95 to Feb 96 to reflect the current date for the DARO restructure.

c. Current Change Explanations --

(Ch-1) The Navy Tactical Input Segment (NTIS) RMD unit DD-250 was signed on March 6, 1996.

(Ch-2) Plans for the Navy Tactical Input Segment (NTIS) are being revised to better support initial operational capability (IOC). The current dates may be revised based upon restructure of the program

JSIPS, December 31, 1995

9c. Schedule (Cont'd):

Navy TIS

and incorporation of the Common Imagery Processor (CIP) as a key component of this system.

d. References --

Development Estimate:

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

10. Performance Characteristics:

JSIPS

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Multiple Sensor Inputs (images/24hrs)					
National	120	120 / 120	120	120	
Tactical	N/A	240 / 240	TBD	240	(Ch-1)
Combined	N/A	360 / 360	N/A	N/A	(Ch-2)
ISO Shelters	N/A	Yes / Yes	Yes	Yes	
Reliability,	95	95 / 95	95	95	
Maintainability (% Operational availability)					
Energy Management	Yes	Yes / Yes	Yes	Yes	
Compatible with both commercial and organic power.					
Mobility/Deployability	Yes	N/A / N/A	Yes	Yes	
- Modular, segmentable, and transportable					

b. Previous Change Explanations --

"Imagery Receipt" has been replaced with "Multiple Sensor Inputs".

Additional performance parameters have been added to conform with our proposed baseline. The parameters identified have been listed as key parameters in the draft JORD as signed out under cover of HQ ACC/DR, 27 Jan 94.

JSIPS, December 31, 1995

10c. Performance Characteristics (Cont'd):
JSIPS

c. Current Change Explanations --

(Ch-1) The Tactical (Multiple Sensor Inputs) performance characteristics are expected to be demonstrated in October 1996.

(Ch-2) The Combined (Multiple Sensor Inputs) performance characteristics are no longer a requirement of this program.

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

APAE Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

a. Performance --	DE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate	
Multiple Sensor Inputs (Tactical)	240	240 / 240	TBD	240	(Ch-1)
Shipboard Operations Reliability, Maintainability (& Operational availability)	N/A	Yes / Yes	TBD	Yes	(Ch-1)
Energy Management Compatible with Shipboard power	95	95 / 95	TBD	95	(Ch-1)
	Yes	Yes / Yes	TBD	Yes	(Ch-1)

b. Previous Change Explanations --

Navy TIS is a new end item and as such there are no previous change explanations.

c. Current Change Explanations --

(Ch-1) Plans for the Navy Tactical Input Segment (NTIS) are being revised to better support initial operational capability (IOC). The current performance characteristics will be demonstrated after the restructure of the program and incorporation of the Common Imagery Processor (CIP) as a key component of this system.

JSIPS, December 31, 1995

10d. Performance Characteristics (Cont'd):
Navy TIS

d. References --

Development Estimate:

FY 94 Amended President's Budget dated 8 April 1993.

Approved Program:

AFAE Approved Acquisition Program Baseline dated January 31, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

JSIPS

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	311.3	278.3	294.4
Procurement	190.9	168.2	138.4
Flyaway	(166.9)		(120.8)
Peculiar Support	(11.2)		(9.2)
Initial Spares	(12.8)		(8.4)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 86 Base-Year \$	502.2	446.5	432.8
Escalation	151.0	129.8	114.2
Development (RDT&E)	(58.8)	(56.6)	(62.6)
Procurement	(92.2)	(73.2)	(51.6)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	653.2	576.3	547.0

Total cost and quantity have been reduced to account for the DARO restructure.

b. Quantity --

Development (RDT&E)	3	1	1
Procurement	9	5	5
Total	12	6	6

Note: Excludes 1 EDTE prototype from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

The 6 JSIPS units are the following:

- 1 Development TEG
- 2 Refurbished units
- 2 Production TEGs
- 1 LRIP

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11b. Total Program Cost and Quantity (Cont'd):
JSIPS

NOTE: The Air Force System Acquisition Review Council (AFSARC) decision in Feb 1993 approved procurement of 1 LRIP System for JSIPS. At that time there were 9 follow-on production systems planned. Subsequent to that, with downsizing, affordability issues and the DARO restructure there are no more JSIPS purchases planned.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

FY94 Amended President's Budget dated 8 April 1993.

Approved Program:

APAE Approved Acquisition Program Baseline dated January 31, 1995.

Navy TIS

	Development Estimate	Approved Program	Current Estimate
a. Cost --			
Development (RDT&E)	10.7	14.9	6.4
Procurement	73.4	59.3	60.3
Flyaway	(64.3)		(52.5)
Peculiar Support	(4.3)		(3.6)
Initial Spares	(4.8)		(4.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 86 Base-Year \$	84.1	74.2	66.7
Escalation	25.3	36.9	32.5
Development (RDT&E)	(9.8)	(5.2)	(1.8)
Procurement	(15.5)	(31.7)	(30.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	109.4	111.1	99.2

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11b. Total Program Cost and Quantity (Cont'd):
Navy TIS

	Development Estimate	Approved Program	Current Estimate
b. Quantity --			
Development (RDT&E)	1	1	1
Procurement	14	26	26
Total	15	27	27

Note: Excludes 1 RDT&E prototype from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

No LRIP yet approved for Navy TIS.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:
FY94 Amended President's Budget dated 8 April 1993.

Approved Program:
APAE Approved Acquisition Program Baseline dated January 31, 1995.

12. Unit Cost Summary:

JSIPS

	Current Estimate (DEC 95 SAR)	UCR Baseline (JAN 95 APB)	Percent Change
a. Total Program			
(1) Cost (BY86\$)	432.8	446.5	
(2) Quantity	6	6	
(3) Unit Cost	72.133	74.417	-3.07
b. Procurement			
(1) Cost (BY86\$)	138.4	160.2	
(2) Quantity	5	5	
(3) Unit Cost	27.680	33.640	-17.72

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12. Unit Cost Summary (Cont'd):

Navy TIS

	Current Estimate (DEC 95 SAR)	DCR Baseline (JAN 95 APB)	Percent Change
a. Total Program			
(1) Cost (BY86\$)	66.7	74.2	
(2) Quantity	27	27	
(3) Unit Cost	2.470	2.748	-10.11
b. Procurement			
(1) Cost (BY86\$)	60.3	59.3	
(2) Quantity	26	26	
(3) Unit Cost	2.319	2.281	1.69

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13. Cost Variance Analysis:
JSIPS

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCOM	TOTAL
Development Estimate	370.1	283.1	0.0	653.2
Previous Changes:				
Economic	+1.4	+4.2	-	+5.6
Quantity	-	-65.7	-	-65.7
Schedule	-	-	-	-
Engineering	-3.9	-	-	-3.9
Estimating	-38.9	+40.8	-	+1.9
Other	-	-	-	-
Support	-	-22.5	-	-22.5
Subtotal	-41.4	-43.2	-	-84.6
Current Changes:				
Economic	-1.7	-4.7	-	-6.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	30.0	-53.0	-	-23.0
Other	-	-	-	-
Support	-	7.8	-	+7.8
Subtotal	+28.3	-49.9	-	-21.6
Total Changes	-13.1	-93.1	-	-106.2
Current Estimate	357.0	190.0	-	547.0

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13a. Cost Variance Analysis (Cont'd):
JSIPS

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	EDT&E	PROC	MILCON	TOTAL
Development Estimate	311.3	190.9	0.0	502.2
Previous Changes:				
Quantity	-	-42.6	-	-42.6
Schedule	-	-	-	-
Engineering	-3.0	-	-	-3.0
Estimating	-34.8	+31.9	-	-2.9
Other	-	-	-	-
Support	-	-12.2	-	-12.2
Subtotal	-37.8	-22.9	-	-60.7
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	20.9	-35.4	-	-14.5
Other	-	-	-	-
Support	-	5.8	-	+5.8
Subtotal	+20.9	-29.6	-	-8.7
Total Changes	-16.9	-52.5	-	-69.4
Current Estimate	294.4	138.4	-	432.8

b. Previous Change Explanations --

EDT&E

Economic: Revised economic escalation indices.

Economic Adjustment for Negative Program Change.

Estimating: Adjustment for Current and Prior Inflation.

Congressional transfer of JSIPS program funds to Defense Airborne Reconnaissance Office (DARO).

Congressional transfer of JSIPS Program funds from services to DARO.

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13b. Cost Variance Analysis (Cont'd):
JSIPS

Army reduction of program funds in preparation to withdraw from JSIPS and to cancel its second EDM unit.

Cancellation of Level III drawings for LRIP contract, cancellation of CMU payback; and reduced SPO Support due to congressional reduction to FY94 funds.

Reduction due to Air Force reprogramming for other higher priorities. (Payback to the Cheyenne Mountain Upgrade Program) and reduced SPO Support.

Reduction due to Army reprogramming for other higher priorities. Modified Imagery Exploitation System (MIES) and reduced SPO Support.

Air Force realignment of funds to JSIPS due to AF termination of ATARS program.

Refinement of cost estimate based on DARO restructure of program.

Procurement
Economic:

Revised economic escalation indices.

Quantity:

Economic adjustment for negative program change.
Total Variance associated with decrease of 1 unit.

Estimating:

Quantity reduction of 1 USAF JSIPS.
Reduction of nonrecurring Flyaway costs associated with decrease of one Army unit.

Adjustment for Current & Prior Inflation.

Approved reprogramming of FY93 Air Force funds to JSIPS to cover additional costs of LRIP contract.

Cannot fund Reliability Verification Testing, Tech Orders, training and continent liabilities for the LRIP contract due to funding cuts in FY94.

Increased Flyaway costs due to transfer of costs erroneously classified and previously counted as support costs.

Costs associated with the refurbishment, refueling

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13b. Cost Variance Analysis (Cont'd):
JSIPS

and planned block upgrades.

Additional estimating changes for the elimination of GFE. (Associated with the reduction of 1 USAF unit).

Support: Re-alignment of Estimating Costs based upon restructure of program.
Initial Spares associated with decrease of one Army unit.

Peculiar Support Equipment associated with decrease of one Army unit.

Other Weapons Systems costs associated with decrease of one Army unit.

Reduction of Peculiar Support Equipment and Other Weapons Systems costs which should have been counted as Flyaway costs.

Reduction of Peculiar Support and Other Weapons Systems cost due to Navy reduction of funds in FY00.

Reduced numbers of Initial Spares due to increased use of Commercial Off-the-Shelf equipment and Congressional funding reductions in the out years.

Reduction of support costs associated with the reduction of 1 AF unit.

Re-alignment of Support costs based on restructure of program.

c. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) EDT&E		
Revised escalation indices. (Economic)	N/A	-1.7
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.7

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13c. Cost Variance Analysis (Cont'd):
JSIPS

	(Dollars in Millions)	
	Base-Year	Then-Year
Reclassification of costs based upon planned restructure of Navy Tactical Input Segment (NTIS). (Estimating)	+8.2	+11.5
Cost reduction due to DARO realignment of costs from JSIPS to other DARO Defense-Wide requirements. (Estimating)	-5.1	-7.3
Reclassification of costs from procurement dollars to research and development dollars based upon expected requirement for additional Requests for Change (RFCs). (Estimating)	+17.4	+25.2
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
RDT&E Subtotal	+20.9	+28.3
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-7.1
Economic adjustment for negative program change. (Economic)	N/A	+2.4
Adjustment for Current and Prior Inflation. (Estimating)	+1.5	+2.2
Reclassification of funds from procurement to research and development funds based upon additional requirement for Requests for Change (RFCs). (Estimating)	-17.4	-25.2
Funds withdrawn in compliance with FY95 Emergency supply and rescission act. (Estimating)	-1.5	-2.3
Cost reduction due to DARO reallocation of funds from JSIPS to other DARO Defense-Wide requirements. (Estimating)	-12.7	-21.1
Transfer of funds and requirements between 1997 and 1998. (Estimating)	-0.1	+0.5
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+0.7
Reclassification of support costs from flyaway costs. (Support)	+5.8	+7.8
Reclassification from flyaway costs to support costs. (Estimating)	-5.8	-7.8
Procurement Subtotal	-29.6	-49.9

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13a. Cost Variance Analysis (Cont'd):
Navy TIS

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	20.5	88.9	0.0	109.4
Previous Changes:				
Economic	+0.3	+1.4	-	+1.7
Quantity	-	-6.6	-	-6.6
Schedule	-	-	-	-
Engineering	-0.7	-	-	-0.7
Estimating	-0.4	+11.8	-	+11.4
Other	-	-	-	-
Support	-	-4.5	-	-4.5
Subtotal	-0.8	+2.1	-	+1.3
Current Changes:				
Economic	-	-3.7	-	-3.7
Quantity	-	-	-	-
Schedule	-	1.8	-	+1.8
Engineering	-	-	-	-
Estimating	-11.5	-9.3	-	-20.8
Other	-	-	-	-
Support	-	11.2	-	+11.2
Subtotal	-11.5	-	-	-11.5
Total Changes	-12.3	+2.1	-	-10.2
Current Estimate	8.2	91.0	-	99.2

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13a. Cost Variance Analysis (Cont'd):
Navy TIS

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RD&E	PROC	MILCON	TOTAL
Development Estimate	10.7	73.4	0.0	84.1
Previous Changes:				
Quantity	-	-6.0	-	-6.0
Schedule	-	-	-	-
Engineering	-0.5	-	-	-0.5
Estimating	+4.4	+1.0	-	+5.4
Other	-	-	-	-
Support	-	-8.8	-	-8.8
Subtotal	+3.9	-13.8	-	-9.9
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-1.0	-	-1.0
Engineering	-	-	-	-
Estimating	-8.2	-5.8	-	-14.0
Other	-	-	-	-
Support	-	7.5	-	+7.5
Subtotal	-8.2	+0.7	-	-7.5
Total Changes	-4.3	-13.1	-	-17.4
Current Estimate	6.4	60.3	-	66.7

b. Previous Change Explanations --

RD&E

Economic: Revised economic escalation indices.
Estimating: Allocation of Navy Tactical Input Segment (NTIS) funds separated from overall JSIPS funding line.

Procurement

Economic: Revised economic escalation indices.
Estimating: Realignment of funding profile based on restructure from DARO.

Realignment of estimating costs associated with the restructure of the program.

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13b. Cost Variance Analysis (Cont'd):

Navy TIS

Support: Increase in support costs based on program restructure.

Re-alignment of support costs relating to the restructure of the program.

c. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Reclassification of RDT&E funds from WTIS requirement to DARO RDT&E funding requirement. (Estimating)	-8.2	-11.5
Revised Escalation Indices (Economic)	--	--
RDT&E Subtotal	-8.2	-11.5
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-4.3
Economic adjustment for negative program change. (Economic)	N/A	+0.6
Revision of annual procurement buy profile. (Schedule)	-1.0	+1.8
Reclassification of flyaway costs to support costs. (Estimating)	-5.8	-9.3
Additional spares requirement based upon revised cost estimate. (Support)	+1.7	+1.9
Reclassification of support costs from flyaway costs. (Support)	+5.8	+9.3
Procurement Subtotal	+0.7	--

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

JSIPS

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes									PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total		
54.433	-0.133	43.484	--	-0.650	-3.517	--	-2.450	36.734	91.167	

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Navy TIS

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.293	-0.074	-3.486	0.067	-0.026	-0.348	--	0.248	-3.619	3.674

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
GROUND IMAGERY SYSTEM:			Target	Ceiling	Qty
E-SYSTEMS (Garland Div), Dallas, TX					
F19628-87-C-0205, FPIF/80/20/VFP			\$109.5	\$121.3	3
Award: August 13, 1987					
Definitized: August 13, 1987					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$187.1	\$206.9	2	\$240.3	\$240.3	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
Cumulative Variances To Date (08/31/95)			\$-74.4	\$0.0	
Net Change			\$-72.6	\$-1.9	
			\$1.8	\$-1.9	

Explanation of Change:

The last CPR was received as of August 1995. In October 1995 it was decided to drop cost reporting on this contract. Further CPM reporting would not add any significant program benefit or managerial insight based upon the fact that all major milestones have been achieved and no technical development remains. This is the last time we will report cost data in the SAR on this program. The Electronic Systems Center (ESC) Field Command Vocal Point (FCVP) has coordinated and concurred on this action.

The total contract value of \$206.9M ,at ceiling, includes all contract type CLINS including FPI,FFP,CPFF and T&M.

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15. Contract Information (Cont'd):

b. Procurement --			Initial Contract Price		
LRIP:			Target	Ceiling	Qty
E-Systems, Inc, Dallas, TX					
F19628-93-C-0201, FP/F/80/20/VFP			\$48.9	\$50.9	1
Award: September 23, 1993					
Definitized: September 23, 1993					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$71.3	\$73.3	3	\$71.3	\$72.3	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
Cumulative Variances To Date (12/31/95)			\$-0.7	\$-3.0	
Net Change			\$-1.6	\$-2.1	
			\$-0.9	\$0.9	

Explanation of Change:

In late 1994 a schedule variance developed that was of concern to the program office. The Government working with the contractor developed a mitigation plan that was successfully implemented during 1995. This mitigation plan successfully reduced schedule and technical risk without any negative impact on overall performance. This plan also allowed the contractor to successfully develop and integrate the Communications Processor Group (CPG) and Softcopy Processor Group (SPG) with minimal impact to the overall program. Cost and schedule data is as of December 31, 1995. Under the current mitigation plan the schedule variance of -\$2.1M will be eliminated and the cost variance of -\$1.6M has been absorbed by the contractor's management reserve. The contractor is expected to deliver the Low Rate Initial Production (LRIP) system to Shaw AFB SC on time and slightly above target cost.

The increase in the Target Price and Estimate at Completion is the result of a modification that was added for the refurbishment of both the 12th AF and the Marine Corps system in September 1995. Both systems are being upgraded to the current 9th AF system baseline.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

Total Program

- (1) Percent Program Completed: 68.8% (11 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 67.6% (\$436.7 / \$646.2)

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JSIPS

- (1) Percent Program Completed: 68.8% (11 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 78.3% (\$428.5 / \$547.0)

Navy TIS

- (1) Percent Program Completed: 54.5% (6 yrs/11 yrs)
- (2) Percent Program Cost Appropriated: 8.3% (\$8.2 / \$99.2)

b. Appropriation Summary (Then-Year Dollars in Millions)

Total Program Appropriation	Prior Years (FY86-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	298.4	13.3	16.3	37.2	365.2
Procurement	90.1	34.9	40.0	116.0	281.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	388.5	48.2	56.3	153.2	646.2

b. Appropriation Summary (Then-Year Dollars in Millions)

JSIPS Appropriation	Prior Years (FY86-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
RDT&E	290.2	13.3	16.3	37.2	357.0
Procurement	90.1	34.9	40.0	25.0	190.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	380.3	48.2	56.3	62.2	547.0

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16b. Program Funding Summary (Cont'd):
Navy TIS

b. Appropriation Summary (Then-Year Dollars in Millions)

Navy TIS Appropriation	Prior Years (FY91-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2001)	Total
EDT&E	8.2	-	-	-	8.2
Procurement	-	-	-	91.0	91.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	8.2	-	-	91.0	99.2

c. Annual Summary -- JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: EDT&E - All Sources

1986				14.7	15.0	15.0	15.0	2.8
1987				13.5	14.3	14.3	14.3	2.7
1988				46.4	50.6	50.6	50.6	3.0
1989				31.8	36.3	36.3	36.3	4.2
1990				52.4	61.7	61.7	61.7	4.0
1991				25.6	31.3	31.3	31.3	4.3
1992				23.3	29.2	29.2	29.2	2.8
1993				12.3	15.8	15.8	12.7	2.7

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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: RDT&E - All Sources (Cont'd)

1994				15.5	20.3	20.3	18.4	2.0
1995				11.8	15.7	8.4	3.6	1.9
1996				9.8	13.3	0.5	0.1	2.0
1997				11.7	16.3			2.2
1998				12.6	17.9			2.3
1999				4.5	6.5			2.2
2000				4.3	6.4			2.2
2001				4.2	6.4			2.2
Subtot	1			294.4	357.0	283.4	273.2	

Appropriation: Procurement - All Sources

1992	1	6.7	26.9	20.7	26.6	26.6	22.0	2.8
1993				17.8	23.3	22.6	12.4	2.7
1994								2.0
1995	2	11.2	14.5	29.5	40.2	36.1	6.8	1.9
1996	2	2.2	19.7	25.1	34.9	1.0	0.1	2.0
1997		24.6		28.1	40.0			2.2
1998		15.0		17.2	25.0			2.3

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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$		Encl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: Procurement - All Sources (Cont'd)

Subtot	5	59.7	61.1	138.4	190.0	86.3	41.3
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Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	6	59.7	61.1	432.8	547.0	369.7	314.5
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Appropriation: 2040 Research, Development, Test + Eval, Army

1986				3.7	3.8	3.8	3.8	2.8
1987								2.7
1988				20.8	22.7	22.7	22.7	3.0
1989				6.5	7.4	7.4	7.4	4.2
1990				16.5	19.4	19.4	19.4	4.0
1991				2.9	3.6	3.6	3.6	4.3
1992				7.5	9.4	9.4	9.4	2.8
1993				1.7	2.2	2.2	2.2	2.7
1994				6.5	8.5	8.5	8.5	2.0
Subtot				66.1	77.0	77.0	77.0	
Army				66.1	77.0	77.0	77.0	

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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1988				12.5	13.6	13.6	13.6	3.0
1989				11.5	13.1	13.1	13.1	4.2
1990				7.0	8.2	8.2	8.2	4.0
1991				10.5	12.8	12.8	12.8	4.3
1992				11.0	13.8	13.8	13.8	2.8
1993				3.9	5.0	5.0	5.0	2.7
1994				4.2	5.5	5.5	5.5	2.0
Subtot				60.6	72.0	72.0	72.0	
Navy				60.6	72.0	72.0	72.0	

Appropriation: 3600 Research, Development, Test + Eval, AF

1986				11.0	11.2	11.2	11.2	2.8
1987				13.5	14.3	14.3	14.3	2.7
1988				13.1	14.3	14.3	14.3	3.0
1989				13.8	15.8	15.8	15.8	4.2
1990				28.9	34.1	34.1	34.1	4.0
1991				12.2	14.9	14.9	14.9	4.3
1992				4.8	6.0	6.0	6.0	2.8

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16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

1993				6.7	8.6	8.6	5.5	2.7
1994				4.8	6.3	6.3	4.4	2.0
Subtot	1			108.8	125.5	125.5	120.5	

"Expenditures and Obligations reflect program office records as of February 29, 1996."

Appropriation: 3080 Other Procurement, Air Force

1992	1	6.7	26.9	20.7	26.6	26.6	22.0	2.8
1993				17.8	23.3	22.6	12.4	2.7
1994								2.0
1995		7.6		8.7	11.8	11.7	0.2	1.9
Subtot	1	14.3	26.9	47.2	61.7	60.9	34.6	
USAF	2	14.3	26.9	156.0	187.2	186.4	155.1	

Appropriation: 0400 RDT&E, Defense Agencies

1995				11.8	15.7	8.4	3.6	1.9
1996				9.8	13.3	0.5	0.1	2.0
1997				11.7	16.3			2.2

JSIPS, December 31, 1995

16c. Program Funding Summary (Cont'd):
JSIPS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 0400 EDT&E, Defense Agencies (Cont'd)

1998				12.6	17.9			2.3
1999				4.5	6.5			2.2
2000				4.3	6.4			2.2
2001				4.2	6.4			2.2
Subtot				58.9	82.5	8.9	3.7	

Appropriation: 0300 Procurement, Defense Agencies

1995	2	3.6	14.5	20.8	28.4	24.4	6.6	1.9
1996	2	2.2	19.7	25.1	34.9	1.0	0.1	2.0
1997		24.6		28.1	40.0			2.2
1998		15.0		17.2	25.0			2.3
Subtot	4	45.4	34.2	91.2	128.3	25.4	6.7	
DoD	4	45.4	34.2	150.1	210.8	34.3	10.4	
Grand Total	6	59.7	61.1	432.8	547.0	369.7	314.5	

JSIPS, December 31, 1995

16c. Program Funding Summary (Cont'd):
Navy TIS

c. Annual Summary -- Navy TIS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Encl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: RDT&E - All Sources

1991				0.9	1.1	1.1		4.3
1992				1.7	2.2	2.2		2.8
1993				1.6	2.0	2.0		2.7
1994				2.2	2.9	2.9		2.0
Subtot	1			6.4	8.2	8.2		

Appropriation: Procurement - All Sources

1998	3	1.2	4.9	7.2	10.5			2.3
1999	8	1.6	14.8	18.8	28.0			2.2
2000	10	2.0	18.1	23.0	35.0			2.2
2001	5	1.0	8.9	11.3	17.5			2.2
Subtot	26	5.8	46.7	60.3	91.0			

Appropriation: MILCON - All Sources - None.

Appropriation: O&M - All Sources - None.

Total	27	5.8	46.7	66.7	99.2	8.2		
-------	----	-----	------	------	------	-----	--	--

JSIPS, December 31, 1995

16c. Program Funding Summary (Cont'd):
Navy TIS

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1991				0.9	1.1	1.1	4.3
1992				1.7	2.2	2.2	2.8
1993				1.6	2.0	2.0	2.7
1994				2.2	2.9	2.9	2.0
Subtot	1			6.4	8.2	8.2	
Navy	1			6.4	8.2	8.2	

Appropriation: 0300 Procurement, Defense Agencies

1998	3	1.2	4.9	7.2	10.5		2.3
1999	8	1.6	14.8	18.8	28.0		2.2
2000	10	2.0	18.1	23.0	35.0		2.2
2001	5	1.0	8.9	11.3	17.5		2.2
Subtot	26	5.8	46.7	60.3	91.0		
DoD	26	5.8	46.7	60.3	91.0		
Grand Total	27	5.8	46.7	66.7	99.2	8.2	

The Navy is currently reevaluating their procurement plans to align N-TIS acquisition with the restructured ATARS program aircraft deliveries.

JSIPS, December 31, 1995

17. Production Rate Data:

JSIPS

a. Deliveries to Date --		Plan/Actual
	RDT&E	1/0
	Procurement	5/0

b. Approved Design-to-Cost Objective -- N/A.

Navy TIS

a. Deliveries to Date --		Plan/Actual
	RDT&E	1/1
	Procurement	26/0

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

JSIPS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and updated in September 1994. Reliability and Maintainability (R&M) are primary JSIPS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the system is different for each service. USAF is 21 hours a day, 365 days per year and the USMC is 8 hours per day, 5 days per week. The personnel cost is a summary cost of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary cost of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The

18a. Operating and Support Costs (Cont'd):
JSIPS

sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per System	Avg Annual Cost Per Antecedent
Mission Personnel	1.8	N/A
O & S Consumables	0.2	N/A
Direct Depot Maintenance	0.2	N/A
Sustaining Investment	0.7	N/A
Indirect Costs	0.4	N/A
Total	3.3	N/A

c. Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O & M	2.9	4.1	4.2	48.0	59.2
Total	2.9	4.1	4.2	48.0	59.2

Navy TIS

a. Assumptions and Ground Rules --

The O&S cost estimate was completed in October 1993 and updated in September 1994. Reliability and Maintainability (R&M) are primary N-TIS design parameters. To achieve our high R&M objectives, the maintenance concept is focused on modularity and inherent fault isolation capabilities through Built-in-Test (BIT) and

JSIPS, December 31, 1995

18a. Operating and Support Costs (Cont'd):

Navy TIS

Built-in-Test-Equipment (BITE) features. A three level maintenance concept is planned with the bulk of system maintenance being accomplished at the organization and depot levels. The operating tempo for the USN is 8 hours per day for 335 days and 30 days at 24 hours per day. The personnel cost is a summary of pay and allowances for officer, enlisted, and civilian personnel required to operate, maintain, and support the system. The consumption cost is a summary cost of fuel and energy resources: operations, maintenance and support materials consumed at the unit level; stock fund reimbursements for depot-level repairables; transportation in support of system operation and maintenance, temporary additional duty/temporary duty, and other unit-level consumption costs, such as purchased services for equipment lease and service contracts. The depot maintenance cost is a summary of labor, material, and overhead incurred in performing major overhauls or maintenance on the system, its components, and associated support equipment at centralized repair depots, contractor repair facilities, or on site by depot teams. The Contractor support cost is a summary of contractor labor, materials, and overhead incurred in providing all or part of the logistics support required by the system. The sustaining support cost is a summary cost of replacement support equipment, modification kits, sustaining engineering, and software maintenance support. The indirect support cost is a summary of personnel support for specialty training, permanent changes of station and medical care. There is no antecedent program.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per N-TIS System	Avg Annual Cost Per Antecedent
Mission Personnel	0.2	N/A
O & S Consumables	0.0	N/A
Direct Depot Maintenance	0.1	N/A
Sustaining Investment	0.1	N/A
Indirect Costs	0.1	N/A
Total	0.5	N/A

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18c. Operating and Support Costs (Cont'd):
Navy TIS

c. Contractor Support Costs -- None.

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A-1 ABRAMS UPGRADE

019

SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: ABRAMS Upgrade

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):

Tank, Combat, Full Tracked, M1A2
(M1A2 Abrams Tank)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:

U.S. Army Tank-Automotive Command	COL CHRISTOPHE R V. CARDINE
ATTN: SFAE-ASM-AB	Assigned: July 18, 1994
Warren, MI 48397-5000	AV 786-6885 COMM (810) 574-6885

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ABRAMS Upgrade, December 31, 1995

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 23735 (Shared) For M1A2 Development
Project D330 (Shared)
PE 63639 (Shared) For M1A2 Armament
Project DC315
PE 23758 (Shared) For M1A2 SEP/FLIR
Project D374 (Shared)

PROCUREMENT:

APFN 2033 ICN G82917 (Army) M1A2 LRIP
APFN 2033 ICN GA0151 (Army)
APFN 2033 ICN GA0750 (Army)
APFN 2033 ICN GB1302 (Army)
APFN 2033 ICN GC0161 (Army)
APFN 2033 ICN GE0161 (Army)
APFN 2033 ICN GA0755 (Army)

O & M:

PE 118207 (Shared) M1 Overhaul

5. (U) Related Programs:

Tank Main Armament Systems (TMAS); Combat Vehicle Improvement Program; PM, Armored Systems Integration (ASI); PM, 2nd Generation Forward Looking Infra-Red (FLIR).

6. (U) Mission and Description:

The mission of the M1A2 Abrams tank is to close with and destroy enemy forces on the integrated battlefield using firepower, maneuver, and shock effect. The M1A2 has completed low rate production and production continues on the M1A2 Upgrade Program. Selected M1 tanks are being overhauled and replaced with M1A2 tanks in order to make them more survivable, fightable, and lethal. Improvements include the combat proven M1A1 features [the 120mm main gun; Nuclear, Biological, and Chemical (NBC) protection; and heavy armor] and the new enhancements linked by the digital distributed data and power architecture of the M1A2. The Inter-vehicular Information System (IVIS) and Position Navigation (POS/NAV) equipment provide improved battlefield command, control, and communications over the M1A1. The new Commander's Independent Thermal Viewer (CITV) also speeds up the target acquisition process so that the gunner may engage more targets in a shorter time interval. The M1A2 Abrams tank replaces the M1A1 tank in the CONUS Contingency Force.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

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

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ABRAMS Upgrade, December 31, 1995

7a. (U) Program Highlights (Cont'd):

1991. The other prototypes were used to assess ballistic and nuclear vulnerability, system reliability, and logistic supportability. The first of five M1A2 pilot production vehicles was delivered in March 1992. Based on the results of a special ASARC held on March 21, 1992, the Army Acquisition Executive (AAE) decided to proceed with low rate initial production (LRIP) of 62 M1A2 tanks. The Congress then directed the Defense Department to proceed with a program to upgrade the M1 tank to the M1A2 configuration. An Acquisition Decision Memorandum (ADM), signed on December 18, 1992 by the Deputy to the USD(A), approved the Army's first Acquisition Program Baseline for the Abrams Upgrade Program. M1A2 Live Fire Testing, New Equipment Training, the Initial Operational Test and Evaluation (IOT&E), and the Production Qualification Test (PQT) were completed during 1993 and 1994. The last of the 62 low rate initial production M1A2 tanks was delivered in March 1994. The M1A2 Milestone III Army System Acquisition Review Council (ASARC) was held on April 8, 1994. The resultant Acquisition Decision Memorandum (ADM), approving the M1A2 for full scale production and deployment, was signed by the Army Acquisition Executive (AAE) on April 20, 1994. The M1A2 underwent its Initial Operational Test & Evaluation (IOT&E) during the period from September to December 1993. The Army Operational Test and Evaluation Command (OPT&E) and the Operational Evaluation Command's independent evaluator found the vehicle to be operationally suitable and operationally effective; however, the Director, Operational Test and Evaluation (DOT&E) evaluation of the operational testing found that the vehicle was operationally effective but not operationally suitable and there were several safety shortcomings. A program to correct the deficiencies discovered in both technical and operational testing is ongoing. The first production M1A2 upgraded from the M1 configuration was delivered in October 1994. As of December 31, 1994, total M1A2 production was 74 units.

b. (U) Significant Developments Since Last Report --

The new Acquisition Program Baseline reflecting the Milestone III ASARC decision was approved by the Army Acquisition Executive on January 15, 1995. The Defense Acquisition Executive re-certified the Abrams Upgrade Program on May 7, 1995. A contract for the System Enhancement Program (SEP) (battlefield digitization) development and 2nd Generation Forward Looking Infra-Red (FLIR) integration was awarded on August 18, 1995. The M1A2 Follow-On Production Test (FPT) on the low rate production vehicles continued throughout all of 1995 at Aberdeen Proving Ground (APG). The Follow-On Test and Evaluation (FOTE) began in September 1995 at the Ft. Hood, Texas training/field exercises. FOTE was suspended in October 1995 due to uncommanded gun/turret motion. Intensive technical effort resulted in hardware and software modifications to the M1A2. FOTE will be rerun in the summer of 1996. Both FPT and FOTE are being used to validate

ARRAMS Upgrade, December 31, 1995

7b. (U) Program Highlights (Cont'd):

corrections to the previously mentioned DOT&E issues. The First Unit Equipped (FUE) milestone was reached on October 21, 1995. There were 110 M1A2 tanks produced for the U.S. Army in 1995, bringing total M1A2 U.S. production up to 184 units as of December 31, 1995.

The M1A2 tank is expected to satisfy the mission requirement.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the AAE approved Acquisition Program Baseline, dated January 15, 1995. There are no Munn-McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Block II ASARC Approval	FEB 85	FEB 85	FEB 85
Award Block II Preliminary System Development Contract	JUL 85	JUL 85	JUL 85
Award ICWS/SE #3 Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award CO2 LRF Preliminary Engineering Development Contract	SEP 86	SEP 86	SEP 86
Award Block II Advanced System Development Contract	DEC 87	DEC 87	DEC 87
M1A2 Milestone II Decision Review	DEC 88	DEC 88	DEC 88
Award Block II FSD Contract	DEC 88	DEC 88	DEC 88
DAB Program Review	AUG 89	AUG 89	AUG 89
Special M1A2 ASARC	MAR 90	MAR 90	MAR 90
First Prototype Delivery (FSED)	JAN 91	JAN 91	JAN 91
Technical Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 92	MAR 92	MAR 92
User Test			
Start	JUN 91	JUN 91	JUN 91
Complete	DEC 91	DEC 91	DEC 91
LRIP Decision (62 Tanks)	MAR 92	MAR 92	MAR 92
Mod FY91 M1A1 Production Contract (Incorporating Block II Changes)	MAY 92	MAY 92	MAY 92
First M1A2 Production Delivery	NOV 92	NOV 92	NOV 92
Live Fire Test			

ABRAMS Upgrade, December 31, 1995

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Start	JAN 93	JAN 93	JAN 93
Complete	JUL 93	JUL 93	OCT 93
Production Qualification Test			
Start	FEB 93	FEB 93	FEB 93
Complete	AUG 94	AUG 94	DEC 94
IOC (Training Base)	FEB 93	FEB 93	FEB 93
Initial Operational Test and Evaluation			
Start	SEP 93	SEP 93	SEP 93
Complete	DEC 93	DEC 93	DEC 93
First Upgrade Pilot Delivery	MAR 94	MAR 94	MAR 94
MLA2 MS III Decision	APR 94	APR 94	APR 94
First Unit Equipped (COMUS)	JUN 95	JUN 95	OCT 95 (Ch-1)
Depot Support Established	SEP 97	SEP 97	SEP 97

b. (U) Previous Change Explanations --

The Current Estimate for the Production Qualification Test (PQT) changed from May 1994 to December 1994.

c. (U) Current Change Explanations --

(Ch-1) - Changed from Jun 95 to Oct 95, the actual First Unit Equipped (FUE) completion date.

d. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated December 10, 1992.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
Maximum Width (inches)	144	144 / 144	144	144
Maximum Height (inches) (grnd to center of turret roof)	96	96 / 96	96	96

10a. (U) Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Maximum Combat Weight (tons)	68.5	68.5	/ 69.5	68.5	68.7
Minimum Range (miles)					
Paved Roads					
With NBC	257	257	/ 243	290	243
Without NBC	270	270	/ 256	305	256
Maximum Speed (mph)					
Paved Roads (0% slope)	41.5	41.5	/ 41.5	42.5	41.5
Cross Country	30	30	/ 30	30	30
Acceleration (0-20 mph) (sec)					
Paved Roads(0%slope)					
With NBC	7.5	7.5	/ 9.0	7.0	7.5
Without NBC	7.2	7.2	/ 9.0	6.9	7.2
Combat Mission	360	360	/ 320	449	360
Reliability (MORF)					
System Maintainability (Maintenance Ratio)	1.04	1.04	/ 1.40	0.95	1.25
Track Life (miles)	2000	2000	/ 1000	1509	1509
Air Transportability	CSA,C17	CSA,C17	/ CSA,C17	CSA	CSA,C17
Fightability-Improved	40	40	/ 25	25	25
Commander's Weapon Station Visibility over MIA1 (%)					
Location Determination (% of distance traveled)	+/-2	+/-2	/ +/-3	+/-0.6	+/- 3
Heading error (after 1 hr) (deg-RMS)	+/-1	+/-1	/ +/-3	+/-0.88	+/- 3
Testability (BIT) (%)					
On-Board System	95	95	/ 95	99	95
Level Detection Capability					
LRU Fault Isolation	95	95	/ 90	96	90
Maximum False Alarm	5	5	/ 10	9.6	10

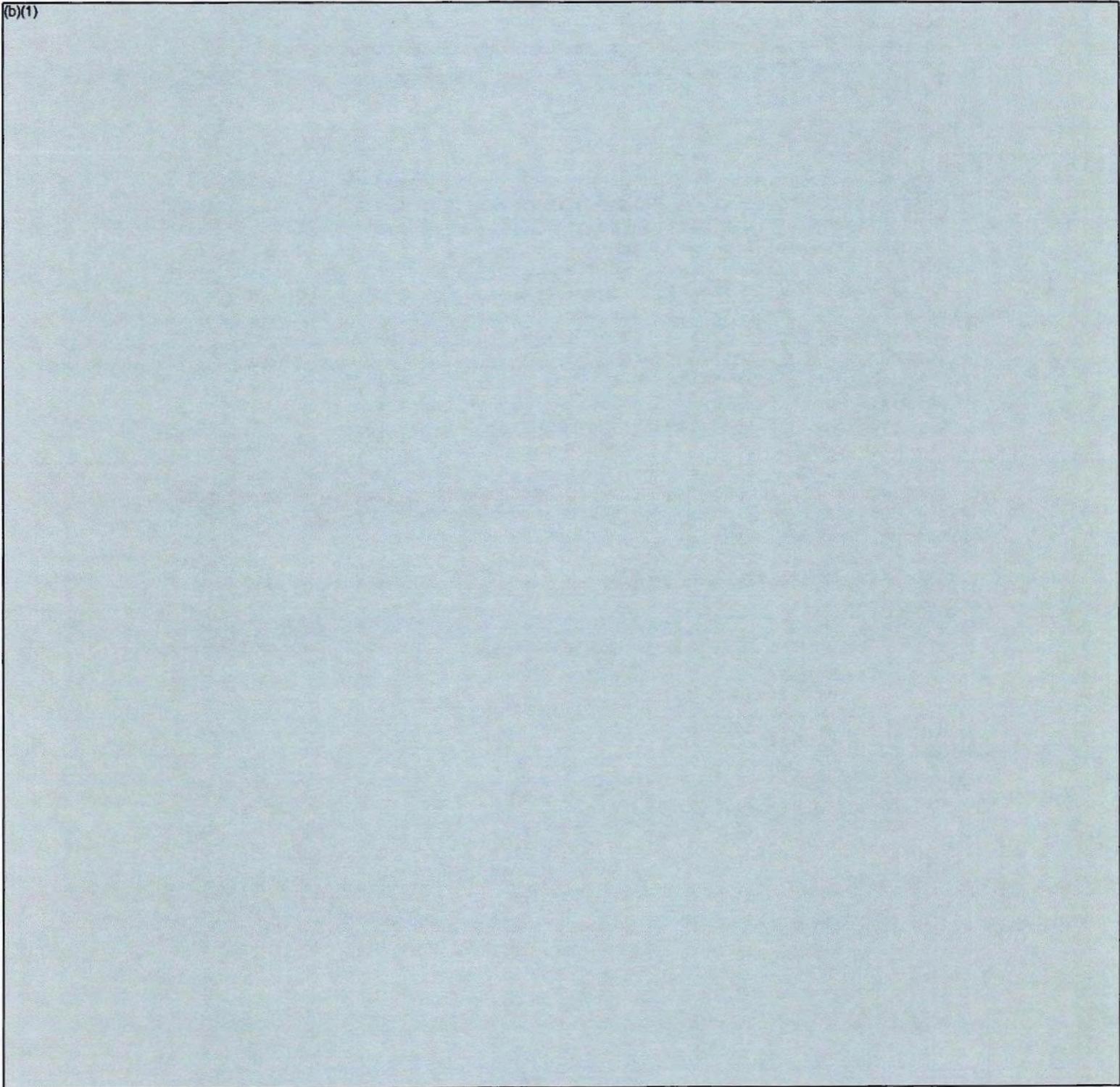
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ABRAMS Upgrade, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

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ABRAMS Upgrade, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):

Production Testing (FPT) at the Aberdeen Proving Ground (APG). The completion of the validation effort at APG will be in June 1996, however, live round check fire has already given outstanding performance. The final test report for the FPT is due in September 1996.

b. (U) Previous Change Explanations --

The Current Estimate for Combat Weight was adjusted to reflect the December 1992 production weight. Four other performance values (for Range, Speed, Combat Mission Reliability, and Maintenance Ratio) changed because of degradation due to weight. The revised estimates are the same as the MIAI objectives which were originally established for a vehicle weighing 63.0 tons (about 8.3% less than the current weight). The Fightability Current Estimate changed to reflect the design specification required of the tank Commander's unity periscope. The Location Determination and Heading Error Current Estimates changed to account for the varying topographical and climatic conditions affecting vehicle traction in the field as opposed to ideal test conditions. Testability Performance Characteristics Current Estimates changed to conform to the contract specifications. The Targets Acquired/Unit Time Current Estimate changed to reflect the anticipated system exchange ratio enhancement over the MIAI when using the new tank's Commander's Independent Thermal Viewer (CITV) in a "hunter-killer" system operational mode. The Current Estimates for five 1st Round Hit Probabilities changed to conform to the results achieved by the MIAI during its Initial Production Test (IPT).

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

DAE Approved Acquisition Program Baseline dated December 18, 1992.

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

ABRAMS Upgrade, December 31, 1995

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	755.4	755.4	825.0
Procurement	6028.6	6028.6	5247.4
Rollaway	(4968.9)		(4487.6)
Other Wpn System	(791.1)		(544.1)
Peculiar Support	(108.5)		(97.2)
Initial Spares	(160.1)		(118.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>207.9</u>	<u>207.9</u>	<u>195.7</u>
Total FY 95 Base-Year \$	6991.9	6991.9	6268.1
Escalation	970.0	970.0	426.1
Development (RDT&E)	(-84.8)	(-84.8)	(-69.6)
Procurement	(1020.8)	(1020.8)	(477.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(34.0)</u>	<u>(34.0)</u>	<u>(18.6)</u>
Total Then-Year \$	7961.9	7961.9	6694.2
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>1060</u>	<u>1060</u>	<u>1060</u>
Total	1060	1060	1060

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

Also excluded are an additional 5 production pilots and 4 upgrade pilots that are not considered fully configured and items. The total procurement quantity of 1060 M1A2 tanks includes 62 Low Rate Initial Production (LRIP) new production M1A2 tanks, which were all delivered in FY93, and 998 M1A2 tanks upgraded from M1 tanks.

c. (U) Foreign Military Sales/International Cooperative Programs -- COUNTRY	QUANTITY/MODEL	CASE VALUE
Saudi Arabia	315/M1A2 Abrams Tanks	\$2.8 Billion
Kuwait	218/M1A2 Abrams Tanks	\$1.9 Billion

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

ABRAMS Upgrade, December 31, 1995

11e. (U) Total Program Cost and Quantity (Cont'd):

(U) Approved Program:

AAE Approved Acquisition Program Baseline dated January 15, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>DCR</u> <u>Baseline</u> (JAN 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY95\$)	6267.9	6991.9	
(2) Quantity	1060	1060	
(3) Unit Cost	5.913	6.596	-10.35
b. (U) Procurement			
(1) Cost (BY95\$)	5247.4	6028.6	
(2) Quantity	1060	1060	
(3) Unit Cost	4.950	5.687	-12.96

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ABRAMS Upgrade, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	O&M	TOTAL
Production Estimate	670.6	7049.4	241.9	7961.9
Previous Changes:				
Economic	+4.6	+20.0	+0.9	+25.5
Quantity	-	-	-	-
Schedule	-	-66.8	-10.5	-77.3
Engineering	-	-	-	-
Estimating	+28.0	-186.6	-11.6	-170.2
Other	-	-	-	-
Support	-	-119.2	-	-119.2
Subtotal	+32.6	-352.6	-21.2	-341.2
Current Changes:				
Economic	3.6	-217.1	-6.6	-220.1
Quantity	-	-	-	-
Schedule	-	-100.6	-	-100.6
Engineering	-	-	-	-
Estimating	48.6	-387.3	0.2	-338.5
Other	-	-	-	-
Support	-	-267.3	-	-267.3
Subtotal	+52.2	-972.3	-6.4	-926.5
Total Changes	+84.8	-1324.9	-27.6	-1267.7
Current Estimate	755.4	5724.5	214.3	6694.2

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ABRAMS Upgrade, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Production Estimate	755.4	6028.6	207.9	6991.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+25.7	-162.4	-10.4	-147.1
Other	-	-	-	-
Support	-	-92.7	-	-92.7
Subtotal	+25.7	-255.1	-10.4	-239.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	43.9	-318.9	-1.8	-276.8
Other	-	-	-	-
Support	-	-207.2	-	-207.2
Subtotal	+43.9	-526.1	-1.8	-484.0
Total Changes	+69.6	-781.2	-12.2	-723.8
Current Estimate	825.0	5247.4	195.7	6268.1

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised Escalation Indices.
 Estimating: Revised estimates for the system enhancement package (SEP)/2nd generation forward looking infra-red (FLIR) sight program.

Procurement

Economic: Revised escalation indices.
 Schedule: Shortened procurement schedule.
 Estimating: Revised hardware price estimates.
 Support: Revised estimates for special tools and test sets, initial support equipment, and technical support.
 Revised requirements for initial spares and

ABRAMS Upgrade, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

training devices associated with revised fielding plan.

Q & M

Economic: Revised escalation indices.

Schedule: Variances associated with schedule changes.

Estimating: Revised M1 overhaul estimates.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+3.6
Adjustment for current and prior inflation. (Estimating)	-6.0	-5.1
Revised estimates for SEP/FLIR hardware and software development. (Estimating)	+49.9	+53.7
RDT&E Subtotal	<u>+43.9</u>	<u>+52.2</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-217.1
Adjustment for current and prior inflation. (Estimating)	+6.4	+7.9
Acceleration of annual procurement buy profile. 153 tanks moved from FY's 2002-2004 to FY's 1997-2001. (Schedule)	N/A	-100.6
Revised hardware price estimates. (Estimating)	-325.3	-395.2
Adjustment for current and prior inflation. (Support)	+3.8	+4.2
Revised requirements for initial spares. (Support)	-42.5	-54.1
Revised requirements for training devices. (Support)	-4.9	-5.7
Revised estimates for other weapon system costs (System technical support, special tools and test sets, and initial support equipment). (Support)	-163.6	-211.7
Procurement Subtotal	<u>-526.1</u>	<u>-972.3</u>
(3) <u>Q & M</u>		
Revised escalation indices. (Economic)	N/A	-6.6

ABRAMS Upgrade, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+0.5	+0.5
Revised MI overhaul estimates. (Estimating)	-2.3	-0.3
O & M Subtotal	<u>-1.8</u>	<u>-6.4</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.511	-0.184	0.001	-0.168	--	-0.480	--	-0.365	-1.196	6.315

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E -- (U) <u>MIA2 SEP Dev/FLIR Integ:</u> General Dynamics Corp., Warren, MI DAAE07-94-C-0727, CPFF Award: August 18, 1995 Definitized: August 18, 1995	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
	\$0.0	\$115.2	0

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$0.0	\$115.2	0	\$115.2	\$123.2
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$0.0	\$0.0
Cumulative Variances To Date (12/31/95)				<u>\$-0.4</u>	<u>\$-3.3</u>
Net Change				\$-0.4	\$-3.3

Explanation of Change:

Schedule variance, based on Cost Performance Report (CPR) data now being evaluated by PM Abrams, is indicative of approximately a 6 week slip in completion of the SEP/FLIR ECP. Cut-in to production is still planned for 3Q99 and fielding is scheduled for 3Q00. The cost and schedule variances were primarily caused by late award of subcontracts, late delivery of government furnished

ABRAMS Upgrade, December 31, 1995

15. (U) Contract Information (Cont'd):

equipment/information, increased subcontract cost, and diversion of personnel to address a field problem.

b. (U) Procurement --

(U) <u>ABRAMS Upgrade Prod:</u>	Initial Contract Price		
General Dynamics Corp., Warren, MI	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAE07-93-C-A003, FFP	\$378.0	\$0.0	172
Award: February 26, 1993			
Definitized: September 30, 1994			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$412.2	\$0.0	206	\$412.2	\$412.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

(U) <u>ABRAMS Upgrade LLM -FY96:</u>	Initial Contract Price		
General Dynamics Corp., Warren, MI	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
DAAE07-95-C-0292, CR	\$0.0	\$95.5	0
Award: March 10, 1995			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$0.0	\$95.5	0	\$95.5	\$95.5

	<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances	N/A	N/A
Cumulative Variances To Date	N/A	N/A
Net Change	\$0.0	\$0.0

Explanation of Change: None.

This contract provides for Long Lead Material (LLM) funding for phase II year one of the M1A2 Upgrade Program (100 tanks in FY96). The bill of materials is divided into a firm fixed price (FFP) portion and a reimbursable portion. It is expected that this contract will be rolled up into a FFP multiyear procurement letter contract in April 1996 and definitized in July 1996. Because this contract will be incorporated into an FFP contract, cost and schedule variances information is not required.

AERAMS Upgrade, December 31, 1995

15. (U) Contract Information (Cont'd):

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>Transmission Upgrade:</u>					
Allison Transmission Div, Indianapolis, IN					
DAAE07-94-C-A016, FFP			\$84.2	\$0.0	397
Award: April 29, 1994					
Definitized: April 29, 1994					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>			
\$84.2	\$0.0	397	\$84.2	\$84.2	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

			Initial Contract Price		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
(U) <u>CITY Multiyear (FY96-98):</u>					
Texas Instruments Inc., Dallas, TX					
DAAE07-95-C-0421, FFP			\$64.1	\$0.0	285
Award: September 26, 1995					
Definitized: September 26, 1995					
			Estimated Price At Completion		
			<u>Contractor</u>	<u>Program Manager</u>	
Current Contract Price					
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>			
\$64.1	\$0.0	285	\$64.1	\$64.1	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 63.2% (12 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 41.8% (\$2798.7 / \$6694.2)

ABRAMS Upgrade, December 31, 1995

16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2003)	<u>Total</u>
RDT&E	604.4	44.2	71.5	35.3	755.4
Procurement	1503.2	585.7	486.4	3149.2	5724.5
MILCON	-	-	-	-	-
O&M	41.4	19.8	22.4	130.7	214.3
Total	2149.0	649.7	580.3	3315.2	6694.2

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Expended</u>	

Appropriation: 2040 Research, Development, Test + Eval, Army

1985				47.9	36.2	36.2	36.2	3.4
1986				29.2	22.7	22.7	22.7	2.8
1987				30.6	24.5	24.5	24.5	2.7
1988				89.3	74.4	74.4	74.4	3.0
1989				142.9	123.9	123.9	123.9	4.2
1990				84.2	75.8	75.8	75.8	4.1
1991				126.3	117.9	117.9	117.9	4.3
1992				76.2	72.8	72.8	71.1	3.0
1993				8.0	7.8	7.8	7.6	2.4

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ABRAMS Upgrade, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obliga- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1994				33.1	33.0	32.8	17.8	2.0
1995				15.1	15.4	10.3	6.4	1.9
1996				42.5	44.2	21.5	0.5	2.0
1997				67.3	71.5			2.2
1998				30.7	33.4			2.2
1999				1.7	1.9			2.3
Subtot				825.0	755.4	620.6	578.8	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

1986		6.3		6.3	5.1	5.1	5.1	2.8
1987		0.7		0.7	0.6	0.6	0.6	2.7
1988								3.0
1989								4.2
1990		107.3		196.1	182.3	182.3	182.3	4.1
1991	62	91.8	258.0	496.3	475.3	475.3	418.7	4.3
1992				238.9	233.7	233.7	199.8	3.0
1993				163.1	162.8	162.8	81.0	2.4
1994	172	34.4	587.3	130.7	133.1	129.4	74.5	2.0

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ABRAMS Upgrade, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh (Cont'd)

1995	34		101.1	298.4	310.3	276.6	55.0	1.9
1996	100		359.0	550.2	585.7	95.3	1.3	2.0
1997	120		412.2	447.6	486.4			2.2
1998	120		482.2	543.7	604.1			2.2
1999	120		525.0	623.7	708.3			2.3
2000	120		513.4	586.2	680.3			2.2
2001	120		531.1	578.1	685.7			2.2
2002	92		477.8	341.0	413.3			2.2
2003				46.4	57.5			2.2
Subtot	1060	240.5	4247.1	5247.4	5724.5	1561.1	1018.3	

Appropriation: 2020 Operation & Maintenance, Army

1993				2.2	2.1	2.1	2.1	2.4
1994				17.3	17.2	17.2	17.2	2.0
1995				21.8	22.1	22.1	22.1	1.9
1996				19.1	19.8	4.9	0.1	2.0
1997				21.1	22.4			2.2
1998				17.8	19.3			2.2

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ABRAMS Upgrade, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2020 Operation & Maintenance, Army (Cont'd)

1999				20.2	22.4			2.3
2000				20.2	22.9			2.2
2001				20.2	23.4			2.2
2002				20.2	23.9			2.2
2003				15.6	18.8			2.2
Subtot				195.7	214.3	46.3	41.5	
Grand Total	1060	240.5	4247.1	6268.1	6694.2	2228.0	1638.6	

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	10/10
Procurement	184/184

b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The O&S costs shown below are derived from the Program Office Estimate (POE) for the M1A2 Upgrade program, dated January 25, 1994. A conversion quantity of 998 tanks was used in this study. The total O&S cost projected in the study is based on a mix of M1s, M1A1s, and M1A2s operating for 20 years in active units, reserve units, and in the training base. Tanks in the active units are assumed to be driven for 800 miles per year,

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ABRAMS Upgrade, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

while tanks in the reserve units and training base are assumed to be driven 288 miles per year. Four dedicated crew members are assumed for each active vehicle. The depot maintenance costs are based on a minimal vehicle overhaul program supplemented by the Inspect and Repair Only as Necessary (IRON) program.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per M1A2 in an Active Army Battalion	Avg Annual Cost Per M1A1 in an Active Army Battalion
Replen Repairables-Spares	102.1	78.9
Replen Consuma-Rep Parts	21.3	18.0
Petro, Oil & Lubricants	4.1	4.1
Training Ammunition	67.8	67.8
Depot Maintenance	29.2	18.4
Crew Pay & Allowances	126.1	126.1
Maintenance Personnel-PA	28.0	37.7
Indirect Support Personn	100.1	105.7
Training (OPA, MPA, OMA)	108.3	105.1
War Reserve Ammo	0.0	0.0
Modification Kits	27.4	8.2
Other MPA, OMA; DBOF	6.6	2.6
Total	621.0	572.6

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: FAAD C2I

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Forward Area Air Defense Command, Control and Intelligence

2. DoD Component: Army

3. Responsible Office and Telephone Number:
AIR DEFENSE COMMAND & CONTROL SYS COL THOMAS L. HALLER
ATTN: SFAE-C3S-AD Assigned: February 15, 1996
REDSTONE ARS, AL 35898-5600 AV 788-3441 COMM 205-895-3441

4. Program Elements/Procurement Line Items:

RDT&E:
PE 64741 Project D126, D2JT
PE 64817 Project D356, D494
PE 64820 Project 2IT, E10

PROCUREMENT:
APPN 2035 ICN AD 5051 (Army)
APPN 2035 ICN AD5050 (Army)
APPN 2035 ICN BA9702 (Army)
APPN 2035 ICN BA9732 (Army)
APPN 2035 ICN WK5053 (Army)

5. Related Programs:
Combined Arms, AVENGER, Bradley STINGER Fighting Vehicle (BSFV),
STINGER, Non-Line of Sight (NLOS), Enhanced Position Location
Reporting System (EPLRS), Joint Tactical Information Distribution

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**DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE**

96-C-0456
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FAAD C2I, December 31, 1995

5. Related Programs (Cont'd):

System (JTIDS), Common Hardware/Software (CHS), Standard Integrated Command Post System (SICPS), High-to-Medium Air Defense Command and Control (HIMAD C2), Single Channel Ground and Air Radio System (SINGARS), Light and Special Divisions Interim Sensor (LSDIS), Global Positioning System (GPS), and Airborne Warning and Control System (AWACS).

6. Mission and Description:

As the air defense node of the Army Tactical Command and Control System (ATCCS), the Forward Area Air Defense Command, Control, and Intelligence (FAAD C2I) System provides critical forward area air defense information to support the command and control decision process at various levels of command. The FAAD C2I System ties weapons together by a C2I network and integrates the Forward Area Air Defense System (FAADS) into the Army Battle Command System (ABCS) architecture. The C2I initiative incorporates a family of sensors and identification equipment (ground and aerial, active and passive) with automated data processing distribution capability. The missions will be accomplished through collection, digital processing and dissemination of target information, air threat warning, and command and control information. The FAAD C2I System will also provide target data processing and display capabilities at the Air Battle Management Operations Center (ABMOC), the Army Airspace Command and Control (A2C2) element, Sensor/Command and Control (C2) node, Battery (BTRY), Platoon/Section (PLT/SEC), and Fire Unit (FU) communications, and command, control and intelligence (C2I) architecture to counter the entire spectrum of the air threat to the divisional forward area through the 90s. The acquisition strategy relies heavily on non-developmental items (NDI) and evolutionary software development to rapidly overcome our current air defense command, control, and intelligence deficiencies and to keep pace with the advancing technologies.

The FAAD C2I Block I provides an early air defense command and control capability for light and special divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS) processors, displays and associated peripherals; (2) Army Data Distribution system (ADDS) JTIDS; (3) combat net radios Single Channel Ground and Air Radio System (SINGARS); (4) LSDIS; (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; and (7) High Frequency Radios (Voice).

The FAAD C2I Block II provides an air defense command and control capability for heavy divisions. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement

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6. Mission and Description (Cont'd):

operations software and the integration of: (1) ATCCS Common Hardware/Software (CHS) processors, displays and associated peripherals; (2) ADDS EPLRS/JTIDS; (3) combat net radios (SINGARS); (4) Ground Based Sensor (GBS); (5) Airborne Warning and Control System (AWACS); (6) FAAD weapon systems; (7) combined arms interface; and (8) HIMAD interface.

The FAAD C2I Block III provides the objective air defense command and control capability for all active and selective reserve component air defense units. The FAAD C2 System will perform the overall FAAD C2I mission via the development of unique engagement operations (EO) software, force operations (FO) software, air battle management, system hardware/software enhancements, and the integration of: (1) ATCCS CHS processors, displays and associated peripherals; (2) Army Data Distribution System (EPLRS/JTIDS); (3) combat net radios (SINGARS); (4) Ground Based Sensor (GBS); (5) AWACS; (6) FAAD weapon systems.

Block IV provides horizontal and vertical (EO and FO) pre-planned product improvements (P3I) to existing Block III capabilities. Command and control on the move, commensurate with the supported force is planned for the Battalion Command Post, A2C2 and Battery Command Post through the utilization of improved CHS. Increased capabilities for the horizontal (Army and Joint) interoperability are planned by interfacing the air defense mission planner with other existing battlefield mission planners (i.e., Aviation, Intelligence, Marine Corps). Increased capabilities to access intelligence data includes: incorporating interfaces to the Joint Intelligence Net (Commander's Tactical Terminal-Hybrid (CTTH)), establishing data links to the Air Force (AWACS JSTARS), and enhanced A2C2 interoperability. FAAD C2I incorporates the capability to automatically receive, process, and display elements of the (Airspace Control Order) ACO as issued by the Air Force.

7. Program Highlights:

a. Significant Historical Developments --

The Short Range Air Defense Command and Control (SHORAD C2) system was presented to the Army Systems Acquisition Review Council (ASARC) Milestone Decision Review (MDR) II on March 26, 1985. On September 3, 1985, the ASARC program was approved by the Vice Chief of Staff of the Army (VCSA). On January 3 and 4, 1986, an ASARC-level review directed that SHORAD C2 become a subsystem of the FAAD System and that SHORAD C2 be redesignated Forward Area Air Defense Command, Control and Intelligence (FAAD C2) System. On July 29, 1986, the Joint Requirements and Management Board (JRMB), a forerunner of the Defense Acquisition Board (DAB), approved the concept for execution of the overall FAAD program as a system of systems and approved the

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7a. Program Highlights (Cont'd):

following segments of FAAD C2I:

(1) Full scale development (beginning with a Build I demonstration) of the FAAD C2I objective software.

(2) A ground based sensor (GBS) Non Development Item (NDI) acquisition strategy to procure four test articles to support other FAAD developmental and operational testing, and 13 Low Rate Initial Production (LRIP) units to be used for operational test and evaluation, production verification, and initial training.

A March 1989 Secretary of Defense Decision Memorandum (SDDM) approved the restructure of the FAAD C2 program to field an initial capability to perform air defense engagements and essential force control interfaces within the divisions followed by development/fielding of the objective system. The May 1990 Army Acquisition Executive Acquisition Decision Memorandum approved development of a tailored FAAD C2I for early fielding to light and special divisions followed by development of the objective system to be fielded to all Army division. Sensors, communications equipment and identification devices will be incorporated in FAAD C2I as they become available.

Following successful completion of FAAD C2 Block I software/hardware technical, developmental and operational (Limited User Test) testing in February 1993, an In-Process Review was conducted at Fort Monmouth, NJ in May 1993. Authority was then granted to proceed into Low Rate Initial Production (LRIP) to procure Block I software and hardware, and sufficient test articles for Block II Initial Operational Test and Evaluation (IOTE).

The FAAD C2I Block I First Unit Equipped (FUE) for light division, using SINGARS, JTIDS, and LSDIS, took place September 30, 1993, when the 101st Airborne (Air Assault) Division, Fort Campbell, formally accepted the Block I FAAD C2I System. The FAAD C2 Block I system deployed a JTIDS (Engineering Development Model) Class 2M radio to provide an AWACS interface.

The DD250 accepting the first GBS preproduction unit was signed May 27, 1993, with a ceremonial rollout at Fort Bliss, TX in June 1993. GBS Development Test Phase I was successfully completed on November 6, 1993 at White Sands Missile Range, NM.

On December 20, 1993 a Letter of Agreement from the Government of Turkey was received concerning Foreign Military Sales (FMS) of GBS for the Turkish Land Forces Command (TLFC) Air Defense Early Warning Demonstration System.

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7a. Program Highlights (Cont'd):

NCTR RDTE funding after FY94 and all procurement funding was deleted from the President's budget because of affordability.

Existing NCTR technology will be incorporated into FAAD C2I Block II configuration. New NCTR technologies will be incorporated as they become available.

The FAAD C2I Block II Developmental Test (DT) and Force Development Test and Evaluation (FDT&E) were combined to reduce the overall test cost and streamline the data collection and analysis. The FAAD C2I Block II IOTE was successfully completed in Dec 94.

The FAAD C2I Block I System was initially fielded to 5-5 ADA Battalion, 2d Infantry Division, Korea, in Sep 94. Both the ABMOC and the A2C2 elements were fielded to support urgent operational mission requirements.

The FAAD C2I System successfully participated in the National Training Center (NTC) 94-07 Rotation in Apr 94, ATCCS III Integrated Interoperability Demonstration in Jul/Aug 94, and ATCCS Horizontal Integration Demos in Sep 94.

A July 1994 Acquisition Decision Memorandum (ADM) approved Long Lead Item (LLI) procurement and Special In-Progress Review (SIPR) for LRIP decision for GBS. A successful SIPR was conducted in Dec 94, with ADM to follow in Jan 95.

All of the equipment for the FAAD Sensors FMS case with the Government of Turkey was assembled into a Turkish Short-Range Air Defense System, and acceptance testing was held with U.S. Government and Government of Turkey officials in the United States in Jun 94. Upon successful completion of testing, this equipment was shipped to Turkey and demonstrated to representatives of the Turkish General Staff and the Turkish Land Forces Command in Aug and Oct 94. This case was successfully completed, meeting all LOA requirements in Dec 94.

On 15 Jun 94, the FAAD Sensors Product Office and Hughes Aircraft presented the first high mobility multipurpose wheeled vehicle (HMMWV) configured GBS to the Commandant, Air Defense Artillery School, Fort Bliss, TX. Testing of the configuration began with a developmental test in Sep and Oct 94 and continued with the IOTE with a follow-on reliability demonstration to verify the configuration meets the exit criteria. All production units will be in the HMMWV configuration. The configuration will provide the soldier and war fighting commander with a more rapidly deployable and maneuverable air defense system.

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7a. Program Highlights (Cont'd):

The following contracts have been awarded:

FAAD C2 Software development in September 1986, modified in July 1990 to provide the initial air defense command and control capability for light/special divisions, completed on schedule and under cost in September 1993; GBS development (NDI) in February 1992; FAAD C2I software development in December 1992 to provide air defense command and control capability, and the FAAD C2I Block III development contract was awarded in September 1994.

The FAAD C2I Project Office Estimate, Component Cost Analysis and Army Cost Position (ACP) were presented to the Office of the Secretary of Defense Cost Analysis Improvement Group (CAIG) on 7 Apr 95. Official approval of the ACP was granted 21 Apr 95 with the release of the CAIG report.

On 24 Apr 95, The Army Acquisition Executive (AAE) approved and released the Milestone III Acquisition Decision Memorandum (ADM) for the FAAD C2I System. The Military Deputy to the Assistant Secretary of the Army Research Development and Acquisition (ASA(RDA)) chaired the Preliminary ASARC on 10 Mar 95. In the interest of streamlining acquisition, and with the assurance of the Military deputy that all issues presented at the Preliminary ASARC meeting were resolved, the AAE cancelled the ASARC review scheduled for 8 May 95.

b. Significant Developments Since Last Report --

The FAAD C2 Operational Requirements Document (ORD) for Block III was reviewed by Department of the Army Staff, and all nonconcurrences were resolved in May 95. On 12 Jun 95, FAAD C2I System's ORD was approved by the Assistant Deputy Chief of Staff for Operations and plans, Force Development, and Headquarters, Department of the Army. The FAAD C2 ORD was certified by the Joint Requirements Oversight Council (JROC), 22 Jun 95. The JROC completed the required Army Systems Acquisition Review Council Exit Criteria as stated in the FAAD C2I Milestone III Acquisition decision Memorandum dated 24 Apr 95.

The Vice Chairman, Joint Chiefs of Staff, and Chairman, Joint Requirements Oversight Council (JROC) reviewed and validated the FAAD C3I key performance parameters on 7 Aug 95. The JROC designated the Headquarters, Department of the Army (HQDA) approval authority for the FAAD C3I Operational Requirements Document. This action accomplished the Army Acquisition Executive approval for the FAAD C3I full rate production in accordance with the Milestone III Acquisition Decision Memorandum dated 24 Apr 95.

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7b. Program Highlights (Cont'd):

The FAAD C2 Block I system completed successful unit fieldings to both the 2d Infantry and 10th Mountain Divisions. The FAAD C2 System was material released to 5-5 ADA Battalion, 2d Infantry Division, Camp Stanley, Korea in Sep 95 and to 3-62 ADA Battalion, 10th Mountain Divisions, Fort Drum, NY in Sep 95. The FAAD C2 Block I System, equipped with the Light and Special Division Interim Sensor, was deployed during the Warrior Focus Advanced Warfighting Experiment in Nov 95. The FAAD C2 Block I system deployed a JTIDS (Engineering Development Model) class 2M radio to provide an AWACS interface.

On 7 Aug 95, the JROC reviewed and validated the key performance parameters for FAAD GBS and ratified the Army's Operational Requirements Document. On 1 Sep 95, the Test and Evaluation Report (TER) was approved by the Army. DOTE prepared the Beyond Low-Rate Production Report and submitted it to Congress in Nov 95.

The Office of Defense Cooperation Turkey (ODC-T) forwarded a Letter of Request for two additional GBS systems to be procured in the FY 96 procurement.

The FAAD C2 Block II system completed a successful First Unit Equipped (FUE) to both the 24th Mechanized Infantry Division in Oct 95. The FAAD C2 System was material released to 1-5 ADA Battalion, 24th Mechanized Infantry Division, Fort Stewart, GA in Sep 95. The FAAD C2 Block II system deployed a JTIDS (Engineering Development Model) class 2M radio to provide an AWACS interface.

The FAAD C2I program is expected to satisfy mission requirements.

c. Changes Since As Of Date --

A Hughes Aircraft Company contract award for full scale production for a quantity of 24 sensors was signed 20 Feb 96.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 2 Jun 95. There are no Nunn-McCurdy Unit Cost breaches.

9. Schedule:

Block I (Light Division)

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
BLOCK I (Light Division)			

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9a. Schedule (Cont'd):
Block I (Light Division)

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Required OP Capability (ROC) Approved	N/A	OCT 85	OCT 85
Milestone II DAB	AUG 86	JUL 86	JUL 86
Contract Award	SEP 86	SEP 86	SEP 86
ROC Amended (USAADASCH, Ft Bliss)	N/A	APR 92	APR 92
Block I DT	N/A	NOV 92	NOV 92
Block I Limited User Test (LUT)			
Start	N/A	JAN 93	JAN 93
Complete	N/A	FEB 93	FEB 93
AAE LRIP Decision	N/A	MAY 93	MAY 93
First Unit Equipped	JUN 91	SEP 93	SEP 93
Organic Support Capability	N/A	SEP 93	SEP 93
LSDIS Enhancement	N/A	OCT 93	OCT 93
Initial Operational Capability	N/A	SEP 94	SEP 94
Depot Support Capability	N/A	OCT 94	OCT 94
C2I/Fire Unit Tech Test			
Start	SEP 90	N/A	N/A
Complete	JUN 91	N/A	N/A

b. Previous Change Explanations --

Milestone II DAB accelerated from Aug 86 to Jul 86 by DA direction. FUE delayed from Jun 91 to Sep 93 due to program restructure. C2I Fire Unit Tech Test was renamed to FAAD C2 Block I Development Test (DT) and is reported as such.

Depot support Capability changed from Sep 96 to Oct 94 due to revised CHS I maintenance concept. As of Oct 94, Tobyhanna Army Depot became the depot support.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
SDDM, August 14, 1986

Approved Program:
AAE Approved Acquisition Program Baseline dated June 02, 1995.

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9d. Schedule (Cont'd):
Block II/III/IV

a. Milestones --	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
BLOCK II (Heavy Div.)			
Milestone II	JUL 86	JUL 86	JUL 86
Contract Award	AUG 92	AUG 92	AUG 92
CDR Complete	JUN 93	JUN 93	JUN 93
Block II DT			
Start	JUN 94	JUN 94	JUN 94
Complete	JUL 94	JUL 94	JUL 94
IOT&E			
Start	OCT 94	OCT 94	OCT 94
Complete	NOV 94	NOV 94	NOV 94
Milestone III (Full Rate Production)	MAR 95	MAR 95	MAR 95
First Unit Equipped	AUG 95	AUG 95	OCT 95 (Ch-1)
First Production Delivery	JUN 96	JUN 96	JUL 96 (Ch-1)
Initial Operational Capability	AUG 96	AUG 96	SEP 96
Organic Support Capability	OCT 94	OCT 94	OCT 94
Depot Support Capability	OCT 94	OCT 94	OCT 94
GBS Enhancement	AUG 95	AUG 95	OCT 95 (Ch-1)
BLOCK III (Objective)			
S/W Development Contract Award	SEP 94	SEP 94	SEP 94
CDR Complete	NOV 96	NOV 96	NOV 96
System Certification Test	JUL 98	JUL 98	JUL 98
Block III IPR	MAR 99	MAR 99	MAR 99
FUE	JUN 99	JUN 99	JUN 99
IOC	JUN 00	JUN 00	JUN 00
Organic Support Capability	JUN 00	JUN 00	JUN 00
Depot Support Capability	JUN 00	JUN 00	JUN 00
BLOCK IV (P3I)			
Contract Award	SEP 99	SEP 99	SEP 99
CDR Complete	OCT 00	OCT 00	OCT 00
System Certification Test	AUG 01	AUG 03	AUG 03
FUE	MAY 02	MAY 04	MAY 04
IOC	AUG 02	AUG 05	AUG 05
Organic Support Capability	SEP 07	SEP 05	SEP 05
Depot Support Capability	SEP 07	SEP 05	SEP 05

b. Previous Change Explanations -- None.

c. Current Change Explanations --

Dates specified are actual dates completed.

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9d. Schedule (Cont'd):
Block II/III/IV

d. References --

Production Estimate:

SDDM, August 14, 1986; ROC July 19, 1986; NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 02, 1995.

10. Performance Characteristics:
Block I (Light Division)

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
BLOCK I (Light Div.)					
Ao (Operational Availability Target (non-maneuvering) positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor->C**2->FU) (m) w/1 sigma	N/A	0.7	/ 0.6	.6	.6
Initial track report delivery time to FU (sec)	N/A	1340-3800 (x,y)	/ 1340-3800 (x,y)	2041	1340-3800 (x,y)
Battle Management Information delivery speed to weapon system (sec)	N/A	15.0	/ 15.0	15.0	15
	N/A	30	/ 30	30	30

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10a. Performance Characteristics (Cont'd):

Block I (Light Division)

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Shelterized subsystem march order and emplacement 90% of time non-remoted equip (less SINGARS remote antenna and JTIDS mast antenna) (min)	30	30	/ 30	30	30
MTBOMF (hrs)					
LSDIS	125	N/A	/ N/A	N/A	N/A
Generator	425	N/A	/ N/A	N/A	N/A

b. Previous Change Explanations --

The Ao (Light Division) changed to reflect the approved Performance Characteristic. The name for Air Defense Sensor (Single) Light Early Warning Detection Device (LEWDD) was changed to Light & Special Division Interim Sensor (LSDIS). The initial track report delivery time to fire unit (sec) was corrected to match system specifications. MTBOMF (hours) for LSDIS and Generators is no longer being tracked. The approved Block I System Ao is 0.6 per the 2 Feb94 RAM Rationale Report.

c. Current Change Explanations -- None.

d. References --

Development Estimate:
SDEM August 14, 1986.

Approved Program:
AAE Approved Acquisition Program Baseline dated June 02, 1995.

Block II/III/IV

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
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BLOCK II (Heavy Div.)

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10a. Performance Characteristics (Cont'd):

Block II/III/IV

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Target	158-390	158-390	/ 204-449	117-178	158-390
(non-maneuvering)	(x,y)	(x,y)	(x,y)	(x,y)	(x,y)
positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor-> C++2-> FU) (m) w/1 sigma)	165-559	165-559	257-4000	132-149	165-559
(z)	(z)	(z)	(z)	(z)	(z)
Initial track report delivery time to FU (sec)	6.0	6.0	/ 6.0	<=1.5	6.0
Air Defense Warning	30	30	/ 30	<=7.5	30
Weapons Control Order	30	30	/ 30	<=7.5	30
Sensor Management	30	30	/ 30	<=7.5	30
Probability of correct target ID passed to FU	.90	.90	/ .90	>=.91	.90
Shelterized subsystem march order and emplacement 90% of time, non-remoted equip (less EPLRS and JTIDS mast antenna) (min)	30	30	/ 30	<=30	30
Identification Friend or Foe Methods	AWACS Proced- ural Mark XII	AWACS Proced- ural Mark XII	/ AWACS Proced- ural Mark XII	MET	AWACS Proced- ural Mark XII
Simultaneous Air Vehicle Track & Display @ ABMOC	210	210	/ 110	210	210
BLOCK III (Objective)					

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10a. Performance Characteristics (Cont'd):

Block II/III/IV

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Target (Non-maneuvering) positional accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor->C**->FU) (m) w/1 sigma	158-390 (x,y)	158-390 (x,y)	/ 204-449 (x,y)	TBD	158-390 (x,y)
	165-559 (z)	165-559 (z)	257-4000 (z)		165-559 (z)
Initial Track Report delivery time to FU (sec)	6.0	6.0	/ 6.0	TBD	6.0
Air Defense Warning Weapons Control Order	30	30	/ 30	TBD	30
Sensor Management Probability of Correct Target ID	30 .9	30 .9	/ 30 .9	TBD	30 .9
Identification Friend or Foe methods	AWACS Preced- ural Mark XII	AWACS Preced- ural Mark XII	/ AWACS Proced- ural Mark XII	TBD	AWACS Proced- ural Mark XII 210
Simultaneous Air Vehicle track and display @ ABMOC	210	210	/ 100	TBD	210
BLOCK IV (P3I)					
Target (non-maneuvering) position accuracy reported to a Fire Unit (FU) with range of air defense sensor inputs (Path=Sensor->C**2I->FU) (m) w/1 sigma	158-390 (x,y)	158-390 (x,y)	/ 204-449 (x,y)	TBD	158-30- (x,y)
	165-559 (z)	165-559 (z)	257-4000 (z)		165-559 (z)

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10a. Performance Characteristics (Cont'd):
Block II/III/IV

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Initial track report delivery time to FU (sec)	6.0	6.0	/ 6.0	TBD	6.0
Air Defense Warning	30	30	/ 30	TBD	30
Weapons Control Order	30	30	/ 30	TBD	30
Sensor Management	30	30	/ 30	TBD	30
Probability of providing correct target ID to FU	.9	.9	/ .9	TBD	.9
Identification Friend or foe Methods	AWACS Proced- ural	AWACS Proced- ural	/ AWACS Proced- ural	TBD	AWACS Proced- ural
Simultaneous Air Vehicle track and display @ ABMOC	Mark XII 210	Mark XII 210	/ Mark XII 100	TBD	Mark XII 210

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

SDDM, August 14, 1986; ROC July 10, 1986, NCTR-1 Development Specification FAAD, Electronic Support Measures (ESM) NCTR System dated October 1990; NCTR-2 Development Specification FAAD, Non-Imaging Sensor, NCTR system dated May 1989.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 02, 1995.

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11. Total Program Cost and Quantity (Current Dollars in Millions):
Block I (Light Division)

	Development	Approved	Current
	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
a. Cost --			
Development (RDT&E)	388.8	501.7	491.8
Procurement	45.7	14.0	13.9
Flyaway	(25.0)		(12.2)
Other Weapons System Costs	(19.4)		(0.2)
Peculiar Support	(1.3)		(0.0)
Initial Spares	(0.0)		(1.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	434.5	515.7	505.7
Escalation	-84.8	-98.3	-88.3
Development (RDT&E)	(-79.9)	(-98.4)	(-88.4)
Procurement	(-4.9)	(0.1)	(0.1)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	349.7	417.4	417.4

FM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for the FAAD C2I program, are included in both Block I and Block II current estimate.

b. Quantity --			
Development (RDT&E)	0	1	1
Procurement	<u>0</u>	<u>3</u>	<u>3</u>
Total	0	4	4

Low Rate Initial Production Decision Memorandum; 28 May 1993 granted authority for three Block I procurement units and a training base.

FAAD C2I units are defined as air defense organizational units. FAAD C2I Block I units vary in size and cost based on specific mission requirements of the organizational unit.

- c. Foreign Military Sales/International Cooperative Programs -- None.
- d. Nuclear Costs -- None.
- e. References --

Development Estimate:
SDDM, August 14, 1986

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11e. Total Program Cost and Quantity (Cont'd):
Block I (Light Division)

Approved Program:

AAE Approved Acquisition Program Baseline dated June 02, 1995.

Block II/III/IV

	<u>Production</u>	<u>Approved</u>	<u>Current</u>
a. Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	466.2	466.2	459.3
Procurement	593.6	593.6	584.6
Flyaway	(481.3)		(460.5)
Other Weapon System Costs	(74.5)		(92.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(37.8)		(31.2)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	1059.8	1059.8	1043.9
 Escalation	 67.4	 67.4	 41.8
Development (RDT&E)	(-8.5)	(-8.5)	(-9.4)
Procurement	(75.9)	(75.9)	(51.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1127.2	1127.2	1085.7

Note: Excludes 1 RDTE prototype from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

There are no LRIP quantities involved in Block II.

FAAD C2I units are defined as organizational units. FAAD C2I Block II units equate to air defense units and vary in size and cost based on specific mission requirements of the type of units.

b. Quantity --

Development (RDT&E)	1	1	1
Procurement	<u>14</u>	<u>14</u>	<u>14</u>
Total	15	15	15

Note: Excludes 1 RDTE prototype from the SAR Baseline and 1 from the Current Estimate that are not considered fully configured.

c. Foreign Military Sales/International Cooperative Programs --
International Cooperative Program -- Project Low Level Air Picture Integration (LLAPI), an Army chief of Staff initiated cooperative effort between the U.S. (FAAD C2I) and Germany (Army Air Defense

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11c. Total Program Cost and Quantity (Cont'd):

Block II/III/IV

Surveillance and Control System) to develop, test and field (FY 93 thru FY 97) an automated means of sharing the low level air picture among adjacent allied armies. Nunn funds received in FY93/94 - \$1.8M.

The FAAD Sensors Product Office signed a Letter of Agreement (LOA), FMS case number TK-B-UXV, with the Government of Turkey on 20 Dec 93 for \$11.3M. This LOA included the GBS system, Light and Special Division Interim Sensor (LSDIS) system, data processing equipment, spares, support equipment, training, and U.S. Government and contractor technical support. This equipment was assembled into a Turkish Short-Range Air Defense System, per LOA requirements, and acceptance testing was held with U.S. Government and Government of Turkey officials in the United States in Jun 94. Upon successful completion of testing, this equipment was shipped to Turkey and demonstrated to representatives of the Turkish General Staff and Turkish Land Forces command in Aug and Oct 94. This case was successfully completed, meeting all LOA requirements, in Dec 94.

d. Nuclear Costs -- None.

e. References --

Production Estimate: None.

Approved Program:

AAE Approved Acquisition Program Baseline dated June 02, 1995.

12. Unit Cost Summary:

Block I (Light Division)

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JUN 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY96\$)	505.7	515.7	
(2) Quantity	4	4	
(3) Unit Cost	126.43	128.93	-1.94

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12. Unit Cost Summary (Cont'd):

Block I (Light Division)

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
b. Procurement			
(1) Cost (BY96\$)	13.9	14.0	
(2) Quantity	3	3	
(3) Unit Cost	4.63	4.67	-0.71

Block II/III/IV

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (JUN 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY96\$)	1043.9	1059.8	
(2) Quantity	15	15	
(3) Unit Cost	69.593	70.653	-1.50
b. Procurement			
(1) Cost (BY96\$)	584.6	593.6	
(2) Quantity	14	14	
(3) Unit Cost	41.757	42.400	-1.52

13. Cost Variance Analysis:

Summary - All end items

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	766.6	710.3	0.0	1476.9
Previous Changes:				
Economic	-14.1	+1.9	-	-12.2
Quantity	-	-	-	-
Schedule	-1.6	-	-	-1.6
Engineering	-	-	-	-
Estimating	+110.4	-12.2	-	+98.2
Other	-	-	-	-
Support	-	-16.1	-	-16.1
Subtotal	+94.7	-26.4	-	+68.3
Current Changes:				
Economic	5.8	-18.3	-	-12.5
Quantity	-	-	-	-
Schedule	-	-40.0	-	-40.0
Engineering	-	-	-	-
Estimating	-13.8	13.8	-	0.0
Other	-	-	-	-
Support	-	10.4	-	+10.4
Subtotal	-8.0	-34.1	-	-42.1
Total Changes	+86.7	-60.5	-	+26.2
Current Estimate	853.3	649.8	-	1503.1

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13a. Cost Variance Analysis (Cont'd):

Summary - All end items

a. Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Estimate	855.0	639.3	0.0	1494.3
Previous Changes:				
Quantity	-	-	-	-
Schedule	-2.4	-	-	-2.4
Engineering	-	-	-	-
Estimating	+115.3	-12.7	-	+102.6
Other	-	-	-	-
Support	-	-19.0	-	-19.0
Subtotal	+112.9	-31.7	-	+81.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-30.8	-	-30.8
Engineering	-	-	-	-
Estimating	-16.8	11.3	-	-5.5
Other	-	-	-	-
Support	-	10.4	-	+10.4
Subtotal	-16.8	-9.1	-	-25.9
Total Changes	+96.1	-40.8	-	+55.3
Current Estimate	951.1	598.5	-	1549.6

13a. Cost Variance Analysis (Cont'd):

Block I (Light Division)

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	308.9	40.8	0.0	349.7
Previous Changes:				
Economic	-14.1	+1.9	-	-12.2
Quantity	-	-	-	-
Schedule	-1.6	-	-	-1.6
Engineering	-	-	-	-
Estimating	+110.1	-12.5	-	+97.6
Other	-	-	-	-
Support	-	-16.1	-	-16.1
Subtotal	+94.4	-26.7	-	+67.7
Current Changes:				
Economic	8.2	0.1	-	+8.3
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-8.1	-0.2	-	-8.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.1	-0.1	-	0.0
Total Changes	+94.5	-26.8	-	+67.7
Current Estimate	403.4	14.0	-	417.4

13a. Cost Variance Analysis (Cont'd):
Block I (Light Division)

a. Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	388.8	45.7	0.0	434.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-2.4	-	-	-2.4
Engineering	-	-	-	-
Estimating	+115.3	-12.7	-	+102.6
Other	-	-	-	-
Support	-	-19.0	-	-19.0
Subtotal	+112.9	-31.7	-	+81.2
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-9.9	-0.1	-	-10.0
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-9.9	-0.1	-	-10.0
Total Changes	+103.0	-31.8	-	+71.2
Current Estimate	491.8	13.9	-	505.7

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Revised schedule.

Estimating: Changes in previous SAR have been prorated between Block I and Block II and include changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, and program restructures.

Procurement

Economic: Revised escalation indices.

Estimating: Previous SAR values have been prorated between

FAAD C2I, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Block I (Light Division)

Block I and Block II; includes changes in OPA to RDTE for Initial Operation Test and Evaluation (IOT&E), additional GFE, budget reductions, program restructures, and delayed deployments.

Support: Reduction in support requirement. Increase in spares to support fielded equipment.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+8.2
Adjustment for Current and Prior Inflation. (Estimating)	-9.9	-8.2
Revised funding for FY97-FY98 related to PBD 604. (Estimating)	--	+0.1
RDT&E Subtotal	<u>-9.9</u>	<u>+0.1</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	-0.1	-0.1
Revised funding in FY94 related to PBD 604. (Estimating)	--	-0.1
Procurement Subtotal	<u>-0.1</u>	<u>-0.1</u>

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13a. Cost Variance Analysis (Cont'd):
Block II/III/IV

a. Summary (Current (Then-Year) Dollars in Millions)

	RDTE&E	PROC	MILCON	TOTAL
Production Estimate	457.7	669.5	0.0	1127.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+0.3	+0.3	-	+0.6
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+0.3	+0.3	-	+0.6
Current Changes:				
Economic	-2.4	-18.4	-	-20.8
Quantity	-	-	-	-
Schedule	-	-40.0	-	-40.0
Engineering	-	-	-	-
Estimating	-5.7	14.0	-	+8.3
Other	-	-	-	-
Support	-	10.4	-	+10.4
Subtotal	-8.1	-34.0	-	-42.1
Total Changes	-7.8	-33.7	-	-41.5
Current Estimate	449.9	635.8	-	1085.7

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13a. Cost Variance Analysis (Cont'd):
Block II/III/IV

a. Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	466.2	593.6	0.0	1059.8
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-30.8	-	-30.8
Engineering	-	-	-	-
Estimating	-6.9	11.4	-	+4.5
Other	-	-	-	-
Support	-	10.4	-	+10.4
Subtotal	-6.9	-9.0	-	-15.9
Total Changes	-6.9	-9.0	-	-15.9
Current Estimate	459.3	584.6	-	1043.9

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-2.4
Adjustment for Current and Prior Inflation. (Estimating)	-4.9	-4.4
Additional funding required for OPTEC (GBS). (Estimating)	+1.1	+1.1

FAAD C2I, December 31, 1995

13c. Cost Variance Analysis (Cont'd):
Block II/III/IV

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Funding decrement for Air Defense Tactical Operations Programs and studies. (Estimating)	-3.9	-4.0
Revised funding in FY97 and FY98 related to PBD 604. (Estimating)	+0.8	+1.6
RDT&E Subtotal	<u>-6.9</u>	<u>-8.1</u>
 (2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-20.5
Economic adjustment for negative program change. (Economic)	N/A	+2.1
Adjustment for Current and Prior Inflation. (Estimating)	+1.3	+1.3
Acceleration of annual procurement buy profile related to GBS (Schedule)	--	-6.8
Refined estimate for accelerated schedule. (Schedule)	-30.8	-33.2
Additional funding increase for EAD and TADIL-J. (Estimating)	+10.1	+10.5
Revised funding in FY95-FY99 related to PBD 604. (Estimating)	--	+1.0
Refined estimate for Block III workstations to be fielded in FY03. (Estimating)	--	+1.2
Adjustment for Current and Prior Inflation. (Support)	+0.4	+0.4
Adjustment for decreased Initial Spares requirement. (Support)	-6.7	-8.2
Adjustment for increased Other Weapons Systems requirement. (Support)	+16.7	+18.2
Procurement Subtotal	<u>-9.0</u>	<u>-34.0</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Block I (Light Division)

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	104.350

Block II/III/IV

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
N/A	--	--	--	--	--	--	--	--	75.147

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
75.147	-1.387	0.001	-2.667	--	0.573	--	0.713	-2.767	72.380

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

GBS (f/Blk II):

Hughes Aircraft Company, Fullerton, CA
DAAH01-91-C-0002, FFP
Award: February 27, 1992
Definitized: February 27, 1992

Initial Contract Price	Qty
\$61.7	6
N/A	

Current Contract Price		
Target	Ceiling	Qty
\$64.3	N/A	5

Estimated Price At Completion	
Contractor	Program Manager
\$61.7	\$61.7

Explanation of Change:

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15. Contract Information (Cont'd):

Cost and Schedule variance reporting is not required on this FFP contract.

<u>FAAD C2 BLOCK III:</u>			Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
TRW INC, REDONDO BEACH, CA					
DAAH01-94-C-S199, Letter	\$43.9	N/A	0		
Award: September 8, 1994					
Definitized: July 28, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$43.9	N/A	0	\$43.9	\$43.7	
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Cumulative Variances To Date (03/03/96)			\$0.0	\$0.0	
Net Change			\$0.0	\$-0.5	

Explanation of Change: None.

(U) The negative schedule variance is due to the availability of sufficient Common Hardware and Software (CHS2) GFE to support software development, testing, and unit fieldings.

b. Procurement --			Initial Contract Price		
<u>Ground Based Sensor:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Hughes Aircraft Company, Fullerton, CA					
DAAH01-91-C-0002, FFP					
Award: January 31, 1995					
Definitized: January 31, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$87.4	N/A	34	\$87.4	\$87.4	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The current contract price reflects the options awarded to date using procurement dollars for the DAAH01-91-C-0092.

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16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

Total Program

- (1) Percent Program Completed: 60.7% (17 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 62.8% (\$944.4 / \$1503.1)

Block I (Light Division)

- (1) Percent Program Completed: 100.0% (16 yrs/16 yrs)
- (2) Percent Program Cost Appropriated: 100.0% (\$417.4 / \$417.4)

Block II/III/IV

- (1) Percent Program Completed: 47.6% (10 yrs/21 yrs)
- (2) Percent Program Cost Appropriated: 48.5% (\$527.0 / \$1085.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years</u> (FY80-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	705.3	20.2	20.5	107.3	853.3
Procurement	110.2	108.7	100.9	330.0	649.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	815.5	128.9	121.4	437.3	1503.1

FAAD C2I, December 31, 1995

15b. Program Funding Summary (Cont'd):

Block I (Light Division)

b. Appropriation Summary (Then-Year Dollars in Millions)

Block I (Light Division)

<u>Appropriation</u>	<u>Prior Years</u> (FY80-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u>	<u>Total</u>
RDT&E	403.4	-	-	-	403.4
Procurement	14.0	-	-	-	14.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	417.4	-	-	-	417.4

b. Appropriation Summary (Then-Year Dollars in Millions)

Block II/III/IV

<u>Appropriation</u>	<u>Prior Years</u> (FY87-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2007)	<u>Total</u>
RDT&E	301.9	20.2	20.5	107.3	449.9
Procurement	96.2	108.7	100.9	330.0	635.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	398.1	128.9	121.4	437.3	1085.7

FAAD C2I, December 31, 1995

16c. Program Funding Summary (Cont'd):
Block I (Light Division)

c. Annual Summary -- Block I (Light Division)

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1980				5.2	3.0	3.0	2.9	10.6
1981				15.9	10.0	10.0	9.7	10.6
1982				19.8	13.2	13.1	12.8	7.6
1983				1.4	1.0	1.0	1.0	4.0
1984				43.5	31.2	31.2	30.7	3.8
1985				24.4	18.1	18.1	15.5	3.4
1986				26.4	20.1	20.1	19.3	2.8
1987				47.4	37.2	37.2	33.2	2.7
1988				67.6	55.2	55.2	55.2	3.0
1989				78.0	66.3	66.3	66.3	4.2
1990				52.5	46.3	46.3	46.1	4.1
1991				61.0	55.8	55.7	54.9	4.3
1992				33.5	31.4	31.4	31.2	3.0
1993				14.1	13.5	13.5	13.5	2.4
1994				1.1	1.1	1.1	1.1	2.0
Subtot	1			491.8	403.4	403.2	393.4	

FAAD C2I, December 31, 1995

16c. Program Funding Summary (Cont'd):
Block I (Light Division)

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army

1994	2		7.8	9.3	9.3	9.3	9.3	2.0
1995	1		4.4	4.6	4.7	4.7	4.7	1.9
Subtot	3		12.2	13.9	14.0	14.0	14.0	
Grand Total	4		12.2	505.7	417.4	417.2	407.4	

c. Annual Summary -- Block II/III/IV

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1987				5.7	4.5	4.5	4.5	2.7
1988				40.1	32.8	32.8	32.8	3.0
1989				45.3	38.5	37.7	37.6	4.2
1990				25.2	22.2	22.0	21.5	4.1
1991				9.0	8.2	8.2	8.2	4.3
1992				60.0	56.2	56.2	56.2	3.0
1993				59.3	56.9	56.9	56.9	2.4

FAAD C2I, December 31, 1995

16c. Program Funding Summary (Cont'd):
Block II/III/IV

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli-gated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1994				43.1	42.1	41.9	41.9	2.0
1995				40.6	40.5	39.6	33.3	1.9
1996				19.8	20.2	4.8	1.8	2.0
1997				19.7	20.5			2.2
1998				14.0	14.9			2.2
1999				1.8	2.0			2.3
2000				6.1	6.8			2.2
2001				6.8	7.7			2.2
2002								2.2
2003				35.2	41.8			2.2
2004				14.1	17.1			2.2
2005				5.8	7.2			2.2
2006				7.7	9.8			2.2
Subtot	1			459.3	449.9	304.6	294.7	

Appropriation: 2035 Other Procurement, Army

1990		0.5		0.5	0.5	0.5	0.5	4.1
1991								4.3

FAAD C2I, December 31, 1995

16c. Program Funding Summary (Cont'd):
Block II/III/IV

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1992								3.0
1993								2.4
1994			7.5	16.0	16.0	15.0	14.2	2.0
1995	1	0.8	51.5	78.0	79.7	76.4	27.7	1.9
1996	4	0.6	94.0	104.9	108.7	29.3	0.2	2.0
1997	4	0.2	83.0	95.1	100.9			2.2
1998	3		58.1	71.4	77.5			2.2
1999	2		45.5	54.6	60.6			2.3
2000			46.5	53.4	60.6			2.2
2001			37.9	55.7	64.5			2.2
2002			15.0	20.6	24.4			2.2
2003			13.2	23.7	28.7			2.2
2004				2.8	3.5			2.2
2005				1.7	2.1			2.2
2006			3.1	3.1	4.0			2.2
2007			3.1	3.1	4.1			2.2
Subtot	14	2.1	458.4	584.6	635.8	121.2	42.6	
Grand								

FAAD C2I, December 31, 1995

16c. Program Funding Summary (Cont'd):

Block II/III/IV

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

Total	15	2.1	458.4	1043.9	1085.7	425.8	337.3	
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Recurring dollars in for years with no quantity are for Block III Workstations which are added to the existing fielded units.

PM-SICPS controlled costs for Standard Integrated Command Post System (SICPS), which is Government Furnished Equipment (GFE) for FAAD C2I program, are included in both Block I and Block II current estimate.

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	1/1
Procurement	2/2

b. Approved Design-to-Cost Objective -- N/A.

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	1/1
Procurement	1/1

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

Block I (Light Division)

a. Assumptions and Ground Rules -- None

FAAD C2I, December 31, 1995

18b. Operating and Support Costs (Cont'd):
Block I (Light Division)

b. Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Blk I	Avg Annual Cost Per Antecedent
Personnel Replmt Trng	0.2	N/A
Maintenance	0.1	N/A
Project Mgmt	0.1	N/A
Spares/Parts	0.2	N/A
Other Sust.	0.2	N/A
Total	0.8	N/A

c. Contractor Support Costs -- None.

Block II/III/IV

a. Assumptions and Ground Rules -- None

b. Costs -- (FY 1987 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Blk II	Avg Annual Cost Per Antecedent
Personnel/Rplmt/Trng	0.2	N/A
Maintenance	0.2	N/A
Project Mgmt	0.1	N/A
Spares/Parts	0.3	N/A
Other Sust	0.3	N/A
Total	1.1	N/A

*** UNCLASSIFIED ***

FAAD C21, December 31, 1995

18c. Operating and Support Costs (Cont'd):
Block II/III/IV

c. Contractor Support Costs -- None.

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RGS:DD-COMP(O&A)823)
PROGRAM: AIM-9X

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
AIM-9X/Short Range Air-to-Air Missile

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

PEO(T)-PMA259
Arlington, VA 22243-1259
AV 664-2100 X5501
COMM (703)604-2100 X5501

CAPT Thomas MacKenzie
Assigned: January 31, 1995

4. (U) Program Elements/Procurement Line Items:

RDT&E:

PE 0207161N Project 0457
PE 0603715D Project W0456
PE 0207161F Project 4132

~~SECRET~~
96-C-0487
Robert Anderson

~~Classification Authority: This is missile security classification of 2/22/94~~
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AND SECURITY REVIEW OFFICE
DEPARTMENT OF DEFENSE

96-C-0487

AIM-9X, December 31, 1995

5. (U) Related Programs:

F-22, F-15, F-16, F-18E/F and Joint Helmet Mounted Cueing System

6. (U) Mission and Description:

The AIM-9 Sidewinder short-range air-to-air (SRM) is a launch and leave, air combat munition that uses passive infrared (IR) energy for acquisition and tracking and complements the Advanced Medium Range Air-to-Air Missile. Air superiority in the SRM arena is essential and includes first shot, first kill opportunity against an enemy employing IR countermeasures. The AIM-9X is a long-term evolution to the AIM-9. Evolutionary improvements in missile seeker, fuze/warhead, and kinematics allow retrofit of components to current missiles to the maximum extent possible. Retrofitting of components will extend the operational effectiveness of existing inventories at an affordable cost while continuing evolution of the AIM-9 series.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --
Demonstration/Validation contracts were awarded 20 December 1994 to Raytheon Company and Hughes Aircraft Company.

b. (U) Significant Developments Since Last Report --
Management System Reviews (MSR) were accomplished in March 1995 for both contractors. Ground-to-Air (GTA) tests 1, 2 and 3 were conducted at NAWC, China Lake in June, August and October 1995 and were successful. Captive Flight Testing (CFT) was initiated in December 1995 at NAWC, China Lake. This started after being granted conditional approval of the Test Readiness Review (TRR). An Early Operational Assessment has also been started using GTA test data from the TRR and the limited captive flights. Design-to-Cost contract modifications were executed in response to the Acquisition Decision Memorandum. The contractors and the Government are converging on a Average Unit Production Cost while incorporating producibility parameters.

Both contractors are experiencing cost growth while executing the DEMVAL contracts, and maintaining the contractual schedules. Additionally, the contractors have been steadily addressing and performing program risk reduction activities per the contract. This effort will further reduce risk prior to Engineering & Manufacturing Development (E&MD).

The (E&MD) draft request for proposal was released to industry in December 1995 with the formal to be released in April 1996.

This system is expected to satisfy mission requirements.

7c. (U) Program Highlights (Cont'd):

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no threshold breaches to the Acquisition Program Baseline dated 16 December 1994 or Nunn McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Planning Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone IV/I	DEC 94	DEC 94	DEC 94
DEM/VAL Contract Award	DEC 94	DEC 94	DEC 94
Early Operational Assessment			
Start	FEB 95	FEB 95	MAR 95
Complete	FEB 96	FEB 96	MAY 96
Milestone II	OCT 96	OCT 96	DEC 96
EMD Contract Award	JAN 97	JAN 97	JAN 97
Preliminary Design Review	AUG 97	AUG 97	AUG 97
Critical Design Review	MAR 98	MAR 98	MAR 98
TECHEVAL			
Start	MAR 00	MAR 00	MAR 00
Complete (Report)	DEC 00	DEC 00	DEC 00
IOT&E			
Start	APR 01	APR 01	APR 01
Complete	APR 02	APR 02	APR 02
LRIP Contract Option Exercised	AUG 01	AUG 01	AUG 01
LRIP First Delivery	JUL 02	JUL 02	JUL 02

(b)(1)

Service Depot support	JAN 05	JAN 05	JAN 05
-----------------------	--------	--------	--------

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

10. (U) Performance Characteristics:

a. (U) Performance --	PE	Approved Program		Demonstrated	Current
		Objective/Threshold		Perf	Estimate
Day/Night Capability	Yes	Yes	/ Yes	TBD	Yes

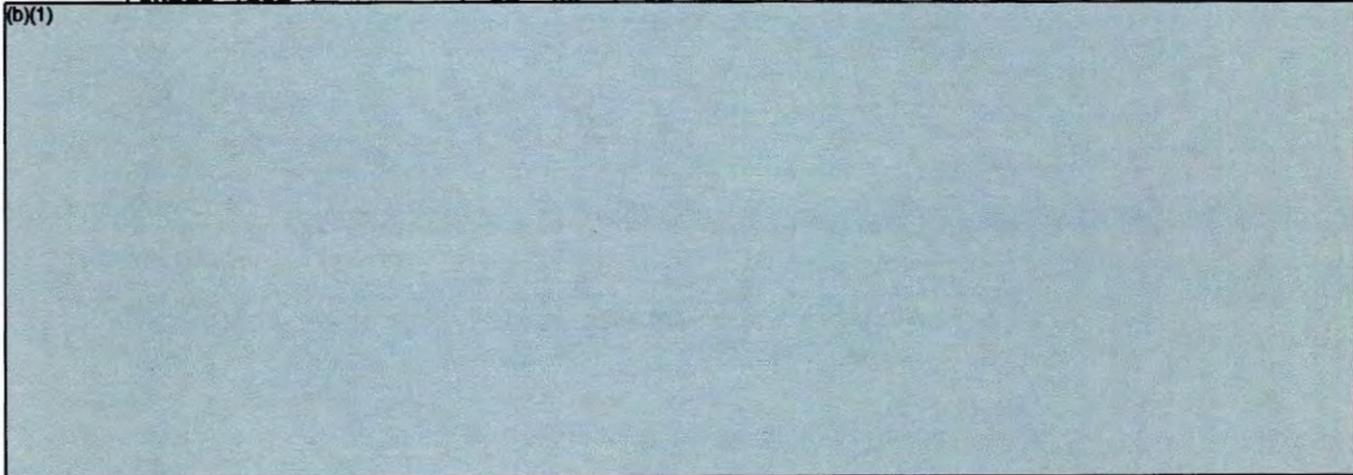


Missile Weight (lbs)	<.or.= 192	<.or.= 192	/ <.or.= 210	TBD	<.or.= 210
Missile Size					
Length (in.)	<.or.= 115	<.or.= 115	/ <.or.= 123	TBD	<.or.= 123
Box Size (in.)	<.or.= 12.5 x 12.5	<.or.= 12.5 x 12.5	/ <.or.= 12.5 x 12.5	TBD	<.or.= 12.5 x 12.5
Diameter (in.)	5	5	/ <.or.=7	TBD	<.or.=7
Digital Interface	Employ from current fighter aircraft w/o digital inter- face	Employ from current fighter aircraft w/o digital inter- face	/ Employ from future current fighter aircraft with digital inter- face	TBD	Employ from future current fighter aircraft with digital inter- face
Off Boresight Capability					
Cueing/Verification	Compat- ible with cueing systems	Compat- ible with cueing systems	/ Compat- ible with cueing systems	TBD	Compat- ible with cueing systems

10a. (U) Performance Characteristics (Cont'd):

	<u>PE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Acquisition (deg.)	>.or.=90	>.or.=90 / >.or.=80 (or compat- ible with cueing system limits, which- ever is less)	TBD	>.or.=80 (or compat- ible with cueing system limits, which- ever is less)
Track (deg.)	>.or.=90	>.or.=90 / >.or.=80	TBD	>.or.=80
Launch (deg.)	>.or.=90	>.or.=90 / >.or.=80	TBD	>.or.=80

(b)(1)



c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	<u>Planning</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	569.0	569.0	584.9
Procurement	0.0	N/A	0.0
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	N/A	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 92 Base-Year \$	569.0	569.0	584.9
 Escalation	 126.0	 126.0	 97.4
Development (RDT&E)	(126.0)	(126.0)	(97.4)
Procurement	(0.0)	(N/A)	(0.0)
Construction (MILCON)	(0.0)	(N/A)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	695.0	695.0	682.3

b. (U) Quantity --			
Development (RDT&E)	62	62	62
Procurement	<u>N/A</u>	<u>N/A</u>	<u>0</u>
Total	62	62	62

Note: Excludes 48 RDTE prototypes from the SAR Baseline and 48 from the Current Estimate that are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Planning Estimate:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated December 16, 1994.

AIM-9X, December 31, 1995

12. (U) Unit Cost Summary:

(U) Note: Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	695.0	0.0	0.0	695.0
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.2	-	-	+7.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.2	-	-	+7.2
Current Changes:				
Economic	-29.1	-	-	-29.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	9.2	-	-	+9.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-19.9	-	-	-19.9
Total Changes	-12.7	-	-	-12.7
Current Estimate	682.3	-	-	682.3

13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Planning Estimate	569.0	0.0	0.0	569.0
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+8.1	-	-	+8.1
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.1	-	-	+8.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	7.8	-	-	+7.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.8	-	-	+7.8
Total Changes	+15.9	-	-	+15.9
Current Estimate	584.9	-	-	584.9

b. (U) Previous Change Explanations --

RDT&E

Estimating: Additional funds provided based on Defense Acquisition Board Approval Decision Memorandum which directed additional funds for DEM/VAL Contracts

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

AIM-9X, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-29.1
Adjustment for Current and Prior Inflation. (Estimating)	+7.8	+9.2
 RDT&E Subtotal	<u>+7.8</u>	<u>-19.9</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Not required for Pre-Milestone II programs in accordance with Section 2433, Title 10, USC.

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --	Initial Contract Price		
(U) <u>AIM-9X:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
HUGHES AIRCRAFT COMPANY, TUCSON, AZ			
N00019-95-C-0089, CPIF	\$22.1	N/A	0
Award: December 20, 1994			
Definitized: December 20, 1994			
Current Contract Price		Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Contractor</u>	<u>Program Manager</u>
\$22.1	N/A	\$24.2	\$24.9
	<u>Qty</u>		
	0		
		<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances		N/A	N/A
Cumulative Variances To Date (12/31/95)		\$-2.4	\$-0.5
Net Change		\$-2.4	\$-0.5

Explanation of Change:

Hughes' unfavorable cost variance is due to their inability to control a major subcontractor's (Texas Instruments) cost growth in the Tracker development areas. Hughes has also encountered unanticipated problems in obtaining Government acceptance/approval of the four (4) risk reduction demonstrations. It is unlikely that Hughes can recover from this negative cost variance by the end of the contract in June 1996. The Program Manager's estimated cost exceeds the contractor's Latest Revised Estimate (LRE) by \$0.7M. Necessary funding exists in the approved budget up to the Program Manager's worst estimated cost. The schedule variance has no impact on the contract.

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15. (U) Contract Information (Cont'd):

CPIF contract - ceiling in not applicable.

(U) <u>AIM-9X:</u>			Initial Contract Price		
RAYTHEON COMPANY, BEDFORD, MA			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-95-C-0090, CPIF			\$24.9	N/A	0
Award: December 20, 1994					
Definitized: December 20, 1994					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$24.9	N/A	0	\$25.8	\$26.7	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			N/A	N/A	
Cumulative Variances To Date (12/31/95)			\$-1.4	\$-1.3	
Net Change			\$-1.4	\$-1.3	

Explanation of Change:

Raytheon's cost variances are driven by greater support required for Ground Test Unit's (GTU) 1, 2 and 3 than was originally planned. They had also planned on the use of Independent Research & Development (IR&D) software which was not possible. The schedule variance is a result of rework of the detector assemblies and a delay caused by calibration of existing algorithms to improve false alarm performance and acquisition range. The Program manager's estimated cost exceeds the contractor's Latest Revised Estimate (LRE) by \$0.9M. Current budget profile includes additional funds which were directed by the OSD CAIG to fund potential cost growth up to the Program Manager's worst estimated cost.

CPIF Contract - ceiling is not applicable.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 25.0% (2 yrs/8 yrs)
- (2) Percent Program Cost Appropriated: 14.2% (\$97.1 / \$682.3)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2002)</u>	<u>Total</u>
RDT&E	49.3	47.8	94.8	490.4	682.3
Procurement	-	-	-	-	-
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	49.3	47.8	94.8	490.4	682.3

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1996				26.1	28.8	22.1	13.6	2.0
1997				51.7	58.4			2.2
1998				54.8	63.3			2.2
1999				70.2	82.9			2.3
2000				50.6	61.1			2.2
2001				22.2	27.4			2.2
2002				8.2	10.4			2.2
Subtot	31			283.8	332.3	22.1	13.6	
Navy	31			283.8	332.3	22.1	13.6	

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1996				17.2	19.0	6.5		2.0
1997				32.2	36.4			2.2
1998				56.4	65.2			2.2
1999				68.7	81.1			2.3
2000				50.7	61.2			2.2
2001				22.2	27.4			2.2
2002				8.2	10.4			2.2
Subtot	31			255.6	300.7	6.5		
USAF	31			255.6	300.7	6.5		

Appropriation: 0400 RDT&E, Defense Agencies

1995				45.5	49.3	45.3	39.4	1.9
Subtot				45.5	49.3	45.3	39.4	
DoD				45.5	49.3	45.3	39.4	
Grand Total	62			584.9	682.3	73.9	53.0	

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17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective --
N/A for Pre-Milestone II programs.

18. (U) Operating and Support Costs:

Not applicable for Pre-Milestone II programs.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)
PROGRAM: CEC

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Cooperative Engagement Capability

2. (U) DoD Component: Navy

Joint Participants:
None

3. (U) Responsible Office and Telephone Number:
Program Executive Officer (Theater Mr. Michael J. O'Driscoll
Air Defense) Cooperative Engagement Assigned: December 1, 1991
2531 Jefferson Davis Highway AV 332-7413 COMM (703) 602-7413
Arlington, VA 22242-5170

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0204152N (Shared) Project E0463 (Shared)
PE 0603755N (Shared) Project U2039

AS AMENDED
MAR 26 1996

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CEC, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1611 ICN 2300000000 (Navy) (Shared)

APPN 1810 ICN 2606000000 (Navy)

APPN 1506 ICN 3300000000 (Navy) (Shared)

O & M:

PE 0708017N (Shared)

5. (U) Related Programs:

Advanced Combat Direction System (ACDS), AEGIS, and E-2C.

6. (U) Mission and Description:

CEC significantly improves Battle Group (BG) Anti-Air Warfare (AAW) by coordinating all BG AAW sensors into a single composite, real time, track picture having fire control quality. CEC distributes sensor data from each ship and aircraft cooperating unit (CU) to all other CUs through a real time, line of sight, high data rate sensor and engagement data distribution network. Each CU independently employs high capacity, parallel processing and advanced algorithms to combine all distributed sensor data into a fire control quality track picture that is the same for all CUs. CEC is highly resistant to jamming and provides accurate gridlocking between CUs.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP) and Combat System modifications. The DDS encodes and distributes ownship sensor data and receives and decodes sensor data from other CUs. The CEP is a high capacity distributed processor that processes ownship and other CU data in a timely manner such that its output is considered real time fire control data. This data is then passed to the ship's combat system as fire control data which is used to cue onboard sensors or engage targets.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

CEC conducted DT-IIA/OT-I testing in June of 1994 which successfully demonstrated CEC concepts and developmental systems. Subsequent to this event, the CEC Carrier Battle Group deployed for six months to the Mediterranean Operating Area where extensive Battle Group Tactics Exploration was conducted using the CEC system. CEC also participated in Joint Task Force '95 exercises where the importance of CEC to Fleet Tactical Ballistic Missile Defense was shown. A Milestone II Navy Program Decision Meeting (NPDM) was approved 25 May 1995. An Acquisition Program Baseline was approved 10 July 1995. A Program Review was conducted 26-28 July 1995 at which program status was reported and all indicators showed positive progress. An All Service Combat Identification Evaluation Team (ASCIET) exercise was conducted during September 1995 which included the participation of CEC units. An Air DT-I event was successfully

CEC, December 31, 1995

7a. (U) Program Highlights (Cont'd):

accomplished at the end of ASCIET using the CEC equipped U.S. Customs Service P-3.

b. (U) Significant Developments Since Last Report --
 A CES Hardware Critical Design Review was conducted 7-8 December 1995. During this CDR, the hardware baseline for the CEC CES was reviewed and approved to proceed into assembly and a test of pre-production units by the Program Manager. A CEC Integrated Baseline Review (IBR) was held 11-14 December 1995 at E-Systems. The IBR successfully verified the technical incorporation of the program requirements into the contractors baseline including cost and schedule requirements. Negotiations were completed for the prime contractor, ECI on 29 November 1995. This system will satisfy the mission requirement.

c. (U) Changes Since As Of Date --
 The ECI contract was definitized on 31 January 1996.

8. (U) Threshold Breaches:
 There are no breaches to the NAE Approved Acquisition Program Baseline dated 10 July 1995. There are no Nunn-McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	MAY 95	MAY 95	MAY 95
Development Contract Modification	MAY 95	MAY 95	JUN 95
Preliminary Design Review Complete	FEB 96	FEB 96	JUL 96 (Ch-1)
Critical Design Review Complete	AUG 96	AUG 96	NOV 96 (Ch-1)
Baseline System Initial Operational Capability	SEP 96	SEP 96	SEP 96
IOT&E (DT-IIB/OT-IIA)			
Start	MAY 97	MAY 97	MAY 97
Complete	JUL 97	JUL 97	JUL 97
LRIP Decision	DEC 97	DEC 97	DEC 97
Low Rate Production Contract Award	JAN 98	JAN 98	JAN 98
Service Final DT&E			
Start	MAR 98	MAR 98	MAR 98
Complete	APR 98	APR 98	APR 98
IOT&E - OPEVAL (OT-IIB)			
Start	MAY 98	MAY 98	MAY 98

9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Complete	MAY 98	MAY 98	MAY 98
Milestones III	OCT 98	OCT 98	OCT 98
Full Rate Production Contract Award	NOV 98	NOV 98	NOV 98
Organic Support Date	JUL 00	JUL 00	JUL 00
Service Depot Support Date	JUL 00	JUL 00	JUL 00
Full Operational Capability	JUL 00	JUL 00	JUL 00

b. (U) Previous Change Explanations --

Development Contract Modification was signed 12 June 1995.

c. (U) Current Change Explanations --

(Ch - 1) The Preliminary Design Review Complete was rescheduled from February 96 to July 96 to align with ACDS and AEGIS Combat System software development and integration schedules. Program progress remains on schedule with no impact.

(CH - 1) The Critical Design Review Complete was rescheduled from August 96 to November 96. Same reason for delay. Program progress remains on schedule with no impact.

d. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
-----------------------	-----------	---	------------------------------------	-----------------------------

(b)(1)



10a. (U) Performance Characteristics (Cont'd):

	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)			

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	1030.4	1030.4	1085.7
Procurement	1150.3	1150.3	1153.8
Rollaway	(677.3)		(826.6)
Other Weapon Systems Costs	(473.0)		(327.2)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>41.2</u>	<u>41.2</u>	<u>41.2</u>
Total FY 95 Base-Year \$	2221.9	2221.9	2280.7

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11a. (U) Total Program Cost and Quantity (Cont'd):

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Escalation	351.2	351.2	307.1
Development (RDT&E)	(57.8)	(57.8)	(52.3)
Procurement	(280.3)	(280.3)	(245.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(13.1)</u>	<u>(13.1)</u>	<u>(9.8)</u>
Total Then-Year \$	2573.1	2573.1	2587.8

b. (U) Quantity --

Development (RDT&E)	9	9	9
Procurement	<u>174</u>	<u>174</u>	<u>174</u>
Total	183	183	183

NOTE: There are 14 units in LRIP MS I/II, 7 OPN, 5 APN, and 2 SCN.

CEC consists of the Data Distribution System (DDS), the Cooperative Engagement Processor (CEP) and Combat System modifications. The DDS encodes and distributes ownship sensor data and receives and decodes sensor data from other CUs. The CEP is a high capacity distributed processor that processes ownship and other CU data in a timely manner such that its output is considered real time fire control data. This data is then passed to the ship's combat system as fire control data which is used to cue onboard sensors or engage targets.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

(U) Approved Program:

NAE Approved Acquisition Program Baseline dated July 10, 1995.

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CFC, December 31, 1995

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (JUL 95 APR)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (FY95\$)	2280.7	2221.9	
(2) Quantity	183	183	
(3) Unit Cost	12.463	12.142	2.65
b. (U) Procurement			
(1) Cost (FY95\$)	1153.8	1150.3	
(2) Quantity	174	174	
(3) Unit Cost	6.631	6.611	0.30

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CEC, December 31, 1995

13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RD&E	PROC	O&M	TOTAL
Development Estimate	1088.2	1430.6	54.3	2573.1
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-5.5	-35.3	-3.3	-44.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	54.0	-	-	+54.0
Estimating	1.3	157.7	-	+159.0
Other	-	-	-	-
Support	-	-154.2	-	-154.2
Subtotal	+49.8	-31.8	-3.3	+14.7
Total Changes	+49.8	-31.8	-3.3	+14.7
Current Estimate	1138.0	1398.8	51.0	2587.8

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	O&M	TOTAL
Development Estimate	1030.4	1150.3	41.2	2221.9
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	52.9	-	-	+52.9
Estimating	2.4	149.3	-	+151.7
Other	-	-	-	-
Support	-	-145.8	-	-145.8
Subtotal	+55.3	+3.5	-	+58.8
Total Changes	+55.3	+3.5	-	+58.8
Current Estimate	1085.7	1153.8	41.2	2280.7

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised economic assumptions. (Economic)
Costs for modification of HRL and Fleet
P-3 aircraft to be used for dedicated
CEC test support in accordance with
Congressional direction. (Engineering)

+52.9 -5.5
+54.0

CEC, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Initial engineering studies to integrate CEC with ANACS/Patriot/Hawk and other National Sensors in accordance with Congressional Direction. (Estimating)	+32.3	+33.0
Various budgetary adjustments (i.e. FYRDC, General R&D reductions, Joint Logistics Systems, F-16 Jordanian Recission, Remote Minehunting Contingencies). (Estimating)	-29.9	-31.7
RDT&E Subtotal	<u>+55.3</u>	<u>+49.8</u>
(2) Procurement		
Revised economic assumptions. (Economic)	--	-35.3
Reclassification of other weapon systems costs to rollaway \$145.8M. (Estimating)	+145.8	+154.2
Reclassification of other weapon systems costs to rollaway. (Support)	-145.8	-154.2
Offset for computed effects of revised escalation indices. (Estimating)	+3.5	+3.5
Procurement Subtotal	<u>+3.5</u>	<u>-31.8</u>
(3) O & M		
Revised economic assumptions based on Feb 96 inflation indices. (Economic)		-3.3

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes							PAUC (Current Est)	
	Econ	Qty	Sch	Eng	Est	Other	Spt		Total
14.061	-0.241	--	--	0.295	0.869	--	-0.843	0.080	14.141

CEC, December 31, 1995

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --			Initial Contract Price		
(U) <u>DDS Design/Fabrication:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
E-Systems (ECI Division), St. Petersburg, FL					
W00024-92-C-5230, CPAF/FF			\$115.0	\$0.0	9
Award: June 1, 1992					
Definitized: January 31, 1996					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$425.0	\$0.0	9	\$368.8	\$382.8	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-7.8	\$-12.1	
Cumulative Variances To Date (12/31/95)			\$-10.4	\$-8.1	
Net Change			\$-2.6	\$4.0	

Explanation of Change:

A major contract MOD was negotiated 29 November 1995 and definitized 31 January 1996. At this period E-Systems Contract Budget Baseline (CBB) is consistent with the target price/fee as reflected in negotiations. The Budget at Completion (BAC) is in process of being updated to reflect negotiated targets. Negotiated budgets will be completed by month end January. The overall SV is attributable to delayed material receipts and anticipated closeout of the ALPA subcontract. The overall status of the program, looking further out to IOC and IOT&E dates, has not been impacted. The overall cost variance is reflective of design complexities encountered with Black Processor hardware design and Tactical Design effort in software. During this period the SV has improved by \$4M.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 17.6% (3 yrs/17 yrs)
- (2) Percent Program Cost Appropriated: 24.1% (\$622.8 / \$2587.8)

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16b. (U) Program Funding Summary (Cont'd):

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years (FY94-95)</u>	<u>Budget Year (FY96)</u>	<u>Budget Year (FY97)</u>	<u>Balance To Complete (FY98-2010)</u>	<u>Total</u>
RDT&E	356.0	266.8	174.4	340.8	1138.0
Procurement	-	-	9.9	1388.9	1398.8
MILCON	-	-	-	-	-
O&M	-	-	-	51.0	51.0
Total	356.0	266.8	184.3	1780.7	2587.8

c. (U) Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY95 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>		<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u> <u>Expended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1994				203.3	202.2	202.1	192.6	2.0
1995				151.6	153.8	146.8	127.9	1.9
1996				257.6	266.8	135.4	13.9	2.0
1997				164.8	174.4			2.2
1998				144.3	156.2			2.2
1999				80.2	88.7			2.3
2000				41.2	46.6			2.2
2001				42.7	49.3			2.2
Subtot	9			1085.7	1138.0	484.3	334.4	

CRC, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$		Encl Rate (%)
		Nonrec	Rec		Program	Obligated Expended	

Appropriation: 1506 Aircraft Procurement, Navy

1997				0.6	0.6		2.2
1998	2		6.4	5.2	5.8		2.2
1999	2		9.9	9.6	10.9		2.3
2000	2		9.4	15.8	18.2		2.2
2001	2		8.3	7.1	8.4		2.2
2002	3		12.8	21.8	26.3		2.2
2003	4		17.4	25.7	31.7		2.2
2004	4		17.8	25.9	32.7		2.2
2005	4		18.2	27.1	34.9		2.2
2006	4		18.6	22.6	29.8		2.2
2007	5		23.7	19.0	25.6		2.2
2008	6		29.1	26.8	36.9		2.2
2009	6		29.8	27.0	38.0		2.2
2010	6		30.4	27.3	39.2		2.2
Subtot	50		231.8	261.5	339.0		

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16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Eacl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1997	1		7.1	8.7	9.3			2.2
1998	1		5.9	11.5	12.6			2.2
1999	1		5.1	24.9	28.0			2.3
2000	5		24.0	32.9	37.8			2.2
2001	6		27.4	52.1	61.1			2.2
2002	6		26.3	29.2	35.0			2.2
2003	4		17.9	21.1	25.8			2.2
2004	5		22.8	29.3	37.1			2.2
2005	1		4.6	4.9	6.3			2.2
Subtot	30		141.1	214.6	253.0			

Appropriation: 1810 Other Procurement, Navy

1998	7		48.9	76.9	84.5			2.2
1999	7		40.8	76.9	86.3			2.3
2000	8		40.6	84.2	96.6			2.2
2001	12		57.0	90.0	105.5			2.2
2002	17		76.7	85.7	102.7			2.2
2003	17		73.5	93.8	114.9			2.2

CIC, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$		Encl Rate (%)	
		Nonrec	Rec		Program	Obligated		Expended

Appropriation: 1810 Other Procurement, Navy (Cont'd)

2004	15		66.2	85.0	106.4		2.2
2005	9		40.7	60.0	76.8		2.2
2006	2		9.3	21.0	27.5		2.2
2007				4.2	5.6		2.2
Subtot	94		453.7	677.7	806.8		

Appropriation: 1804 Operation and Maintenance, Navy

1998				0.3	0.3		2.2
1999				1.0	1.1		2.3
2000				2.4	2.7		2.2
2001				2.6	3.0		2.2
2002				4.1	4.8		2.2
2003				5.1	6.1		2.2
2004				5.4	6.6		2.2
2005				5.8	7.3		2.2
2006				6.2	8.0		2.2
2007				3.1	4.1		2.2
2008				3.0	4.0		2.2

CEC, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year \$	Total Then-Year \$		Excl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 1804 Operation and Maintenance, Navy (Cont'd)

2009				1.1	1.5		2.2
2010				1.1	1.5		2.2
Subtot				41.2	51.0		
Grand Total	183		826.6	2280.7	2587.8	484.3	334.4

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

RDT&E	<u>Plan/Actual</u>
Procurement	5/5 0/0

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	<u>Development Estimate</u>	<u>Current Estimate</u>	<u>Latest Approved Threshold</u>
@ Qty 174 - @ Peak Rate: 1.0/mo			
FY 94 Base-Year \$	6.611	6.631	0.000
Then Year \$	8.222	8.039	0.000
@ Qty 21 (1st three years) - @ Peak Rate: 1.0/mo			
FY 94 Base-Year \$	10.829	10.190	0.000
Then Year \$	12.024	11.333	0.000

18. (U) Operating and Support Costs:

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18a. (U) Operating and Support Costs (Cont'd):

a. (U) Assumptions and Ground Rules --

The CEC O&S costs include applicable costs in accordance with CAIG Operating & Support Cost Estimating Guide of May 1992.

1. MISSION PERSONNEL: The costs of maintenance personnel defined in the CEC Navy Training Plan of December 1993 are included. The costs of operations personnel and other mission personnel are excluded since CEC requires no system specific operators or support personnel.

2. O, I, & D MAINTENANCE: Costs for labor, overhead, material, and repair parts projected to be performed at O, I and D-level maintenance activities have been included.

3. CONTRACTOR SUPPORT: Costs for interim contractor Integrated Logistics Support (ILS) pending establishment of organic Navy capabilities are included.

4. SUSTAINING SUPPORT: The costs of continuing engineering support and software maintenance projected for Navy in-house facilities have been included. Also included are costs to provide, operate and maintain CEC training equipment at projected training sites. Costs for support equipment, and modification kit procurement/installation have not been included since there are no unique support equipment requirements and there are no currently planned modifications to CEC equipment.

5. PERSONNEL SUPPORT: Costs for initial training, permanent change of station (PCS) and medical support have been included. Training course costs for maintenance personnel are also included. There are no specific training course requirements for CEC operator personnel.

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18b. (U) Operating and Support Costs (Cont'd):

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per CEC Systems	Avg Annual Cost Per Antecedent System
Mission Personnel	0.2	N/A
Maintenance	0.7	N/A
Interim Contractor Spt	0.1	N/A
Sustaining Support	6.9	N/A
Indirect Support	0.3	N/A
Total	8.2	N/A

c. (U) Contractor Support Costs -- (Current (Then-Year) Dollars in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
O&M	---	2.3	11.8	42.8	56.9
I/F	---	---	---	---	---
Total	---	2.3	11.8	42.8	56.9

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(OEA)823)

PROGRAM: B-1 CMUP-JDAM

AS OF DATE: December 31, 1995

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SAF/PAS

1. Designation and Nomenclature (Preferred Name):

B-1 Conventional Mission Upgrade Program - Joint Direct
Attack Munition (CMUP-JDAM)

00-415-77

2. DoD Component: USAF

3. Responsible Office and Telephone Number:

ASC/YD B-1B System Program Office
2275 D ST STE 16 MS 16
WPAFB, OH 45433-7233

Col Robert H. Matthews
Assigned: May 1, 1994
AV 785-3281 COMM (513) 255-3281

4. Program Elements/Procurement Line Items:

RDY&E:

PE 0604226F Project 654143

PROCUREMENT:

APFN 3010 ICN 0101126F (Air Force)

CLE. REQ.
PROCUREMENT

5. Related Programs:

Joint Direct Attack Munition (JDAM), Air Force Mission Support
System (AFMSS)

6. Mission and Description:

The Air Force has established the requirement to enhance the
capability of the B-1B Lancer to perform near precision attacks
against all but heavily defended targets deep in enemy airspace
during conventional operations. The requirement is satisfied with a

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96-c-0348

B-1 CMUP-JDAM, December 31, 1995

6. Mission and Description (Cont'd):

material solution to provide the B-1B with improved lethality through the integration of near precision conventional weapons such as the Joint Direct Attack Munition (JDAM). As part of the advanced munitions integration, implementation of MIL-STD-1760 electrical interconnect system, computer upgrades, communication upgrades and the Global Positioning System (GPS) is included. The B-1B CMUP is a modification program integrating predominantly non-developmental items to enhance aircraft conventional mission capabilities. While the B-1 will operate primarily in a conventional role, these modifications will not degrade its capabilities to fight in a nuclear role. With the enhanced conventional capabilities available through the CMUP effort, the B-1 will maintain its role as the backbone of the Air Force's bomber fleet.

7. Program Highlights:

a. Significant Historical Developments --

On 16 Mar 95 - B-1B CMUP-JDAM contract awarded to Rockwell, North American Aircraft. On 11 Oct 95 - McDonnell Douglas selected as JDAM contractor.

b. Significant Developments Since Last Report --

Block D B-1 CMUP-JDAM software Preliminary Design Review (PDR) was successfully completed 30 Nov 95. All software technical performance metrics are within expected ranges. JDAM (Block D) System hardware /software PDR was successfully completed in Nov 95. Safe separation flight testing began 1 Dec 95, and all test results to date have been as expected. By Dec 95, 6 JDAM test vehicles have been successfully separated (2 from each weapons bay). With the concurrence of AFPEO/FB and SAF/AQ we are planning a Low Rate Initial Production decision for JDAM/1760 launcher in Jun 98. The first Low Rate Initial Production (LRIP) contract award for JDAM launcher kitproof upgrade kits (3) remains scheduled for Jun 96. The change in program planning includes a second LRIP (21 kits upon receipt of SAE LRIP quantity approval) scheduled for Jun 98 to support accelerating JDAM capability onto the B-1. The full rate production decision (MS III) with associated Live Fire Test and Evaluation (LFT&E) and Initial Operational Test and Evaluation (IOT&E) test report will be in Oct 98. The B-1 SPO is working to accelerate the LFT&E report submittal to OSD by Apr 98.

The program is implementing Demand Assigned Multiple Access (DAMA) for satellite communications which went on contract 30 Nov 95 as an undefinitized contract action (UCA).

The scope of the computer program has been defined. The program will now provide open architecture 32-bit hardware and ADA software. This

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7b. Program Highlights (Cont'd):

will result in the best technical solution and result in long term O&S cost reduction. Wind Corrected Munitions Dispenser (WCMD) capability will be implemented concurrently with the computer upgrade. An interim Advanced Change Study Notice (ACSN) for WCMD Interface Control Development was issued to Rockwell International (RI) for interface development activities. Contract award for the computer/WCMD program is scheduled for May 96.

The upgrades to the B-1B system outlined in the above description will enable the user to satisfy mission requirements.

c. Changes Since As Of Date --

For Demand Assigned Multiple Access (DAMA) a bi-lateral contract modification was issued in Mar 96.

8. Threshold Breaches:

There are no cost or schedule breaches to the DAE Approved Acquisition Program Baseline dated January 25 1995.

9. Schedule:

a. Milestones --	Development Estimate	Approved Program	Current Estimate
MILESTONE I	APR 93	APR 93	APR 93
MILESTONE II	JAN 95	JAN 95	JAN 95
Development Contract Award			
JDAM/1760	FEB 95	FEB 95	MAR 95 (Ch-1)
GPS/Communications	FEB 95	FEB 95	MAR 95 (Ch-1)
Computer	JAN 96	JAN 96	MAY 96 (Ch-1)
Critical Design Review Complete			
JDAM/1760	APR 96	APR 96	MAY 96 (Ch-1)
GPS/Communications	APR 96	APR 96	MAY 96 (Ch-1)
Computer	JUN 98	JUN 98	FEB 98 (Ch-1)
Service Final DT&E			
JDAM/1760			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	JUN 98
GPS Communications			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	JUN 98
Computer			
Start	JAN 00	JAN 00	OCT 99 (Ch-1)
Complete	SEP 00	SEP 00	OCT 00 (Ch-1)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Low Rate Production Contract Award			
JDAM/1760	DEC 96	DEC 96	JUN 96 (Ch-1)
GPS/Communications	FEB 96	FEB 96	APR 96
Computer	JAN 00	JAN 00	JUL 99 (Ch-1)
Low Rate Initial Production First Delivery			
JDAM/1760	SEP 98	SEP 98	APR 98 (Ch-1)
GPS/Communications	NOV 97	NOV 97	NOV 97
Computer	JUL 01	JUL 01	FEB 01
IOT&E			
JDAM/1760			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	JUN 98
GPS/Communications			
Start	AUG 97	AUG 97	AUG 97
Complete	JUN 98	JUN 98	JUN 98
Computer			
Start	SEP 00	SEP 00	OCT 99 (Ch-1)
Complete	JAN 01	JAN 01	OCT 00 (Ch-1)
MILESTONE III-JDAM/1760	JAN 99	JAN 99	OCT 98 (Ch-1)
MILESTONE III-GPS/Communications	JAN 97	JAN 97	JAN 97
MILESTONE III-Computer	JAN 01	JAN 01	APR 01 (Ch-1)
Full Rate Production Contract Award			
JDAM/1760	JAN 99	JAN 99	OCT 98 (Ch-1)
GPS/Communications	JAN 97	JAN 97	JAN 97
Computer	JAN 01	JAN 01	APR 01 (Ch-1)
Organic Support Capability Date			
JDAM/1760	JUL 01	JUL 01	JUN 00 (Ch-1)
GPS/Communications	NOV 99	NOV 99	NOV 99
Computer	DEC 02	DEC 02	DEC 01 (Ch-1)
Service Depot Support Date			
JDAM/1760	JUL 01	JUL 01	JUN 00 (Ch-1)
GPS/Communications	NOV 99	NOV 99	NOV 99
Computer	MAR 03	MAR 03	DEC 01 (Ch-1)
Initial Operational Capability			
JDAM/1760	JUL 01	JUL 01	JUN 00 (Ch-1)
GPS/Communications	NOV 99	NOV 99	NOV 99
Computer	JAN 03	JAN 03	DEC 01 (Ch-1)

Footnotes:

The program Milestone I and Milestone II were completed upon USD (A&T) memos to SECAF on 30 Apr 93 and 25 Jan 95, respectively. Milestone III approval and Full Rate Production contract award of Jan

B-1 CMUP-JDAM, December 31, 1995

9a. Schedule (Cont'd):

97 is for procurement of GPS/Comm GFE Group B hardware which has a delivery lead time of 21 months. Milestone Decision Authority (MDA) is the Service Acquisition Executive (SAE) for both LRIP and follow-on production kits. The program also defines Low Rate Production Contract Award as the contract award for the kitproof upgrade kit, Low Rate Initial Production First Delivery as the delivery of the first kitproof upgrade kit, and Full Rate Production Contract Award as the production contract award for follow-on upgrade kits. The program's Organic Support Capability Date is the date O-I level maintenance is in place at main operating base, and the Depot Support Date is the date organic depot support is declared or contract depot support is in place. The program's Initial Operational Capability, agreed to by HQ/ACC, is defined as the Required Assets Available (RAA) date. RAA for JDAM/1760 is defined as the date assets consisting of three modified aircraft, a total of three modified module/launchers, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals, and source data to support training systems, programs and courses are delivered to the using command. RAA for GPS/Communications and Computer is defined as the dates assets consisting of three modified aircraft, associated O-level support equipment, O-level spares, verified O-level maintenance and flight manuals, and source data to support training systems, programs and courses are delivered to the using command. Computer upgrade dates have been revised to reflect the recent computer upgrade program decisions.

b. Previous Change Explanations -- None

c. Current Change Explanations --

Ch 1- In order to accelerate B-1/JDAM integration, the JDAM weapon development flight test activities were excised from the B-1 program. This will allow us to complete IOT&E early, accelerate the production decision, achieve organic and service depot capability support earlier and attain IOC in Jun 00 versus Jul 01.

There is an overall explanation of the schedule date changes for the computer. The original dates were based on a "generic" computer upgrade program. In Nov 95, ACC approved the technical solution (which is referred to as Option 1), and the schedule was refined in Dec 95 to reflect the current dates.

d. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated January 25, 1995

9d. Schedule (Cont'd):

Approved Program:

DAE Approved Acquisition Program Baseline dated January 25, 1995.

10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Accurate GPS-Aided Munition	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)	/ Capabil- ity to employ GPS- aided munition (intent JDAM)	TBD	Capabil- ity to airborne retarget GPS- aided munition (intent JDAM)
Mission Capable (MC) Rate (%)	75	75	/ 65	TBD	65
Supportability CWIU MTBF (hrs)	3000	3000	/ 1000	TBD	1600

Note (For Information only): Basic performance factors for the B-1B (speed, weight, range, terrain following /avoidance performance) will not be significantly affected by the CMUP-JDAM integration effort.

1. Mission Capable Rate as expressed applies to the overall fleet aircraft wartime mission capable rate. The integration of the weapons upgrade modifications will not cause the fleet MC rate to degrade below the threshold value. For information only - the following reliability and maintainability parameters are specified in the weapons upgrade contract specifications: mean time between critical failure, mean time between unscheduled maintenance, maintenance manhours per flight hour, and max/mean repair time on equipment. These parameters will be used to support MC rate calculations.

2. OSD/WSIG requested the addition of a supportability parameter that measures and tracks the weapon system upgrade reliability. The agreed to parameter is the mean time between failure (MTBF) of the Conventional Weapons Interface Unit (CWIU). This parameter was selected because this line replacable unit (LRU) is the only conventional system carriage modification item that requires development. The specified values for the threshold and objectives are for system maturity. System maturity for the CMUP weapons upgrade occurs at IOC plus 15,000 operating flight hours.

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10b. Performance Characteristics (Cont'd):

- b. Previous Change Explanations -- None.
- c. Current Change Explanations -- None.
- d. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated January 25, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 25, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Development Estimate	Approved Program	Current Estimate
Development (RDT&E)	565.0	565.0	581.6
Procurement	373.5	373.5	392.0
Recurring Flyaway	(330.9)		(351.9)
Nonrecurring Flyaway	(18.9)		(8.6)
Total Flyaway	(349.8)		(360.5)
Peculiar Support	(3.8)		(10.5)
Initial Spares	(19.9)		(21.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	0.0	0.0	0.0
Total FY 95 Base-Year \$	938.5	938.5	973.6
Escalation	149.3	149.3	115.5
Development (RDT&E)	(53.8)	(53.8)	(42.2)
Procurement	(95.5)	(95.5)	(73.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1087.8	1087.8	1089.1
b. Quantity --			
Development (RDT&E)	N/A	N/A	0
Procurement	95	95	95
Total	95	95	95

The procurement quantity of 95 in 11.b represents the number of operational aircraft being modified under the B-1 CMUP-JDAM program; however, as this is a modification program, the quantities specified in section 16 represent procured modification kit quantities.

In the APB, Low Rate Production Contract Award is defined as the

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B-1 CMUP-JDAM, December 31, 1995

11b. Total Program Cost and Quantity (Cont'd):

contract award for the kitproof upgrade kit. The Low Rate Initial Production First Delivery is defined in the APB as delivery of the first kitproof upgrade kit. The kitproof upgrade kit quantities are 1 for GPS, 3 for JDAM and 1 for the computer upgrade. As referenced in the notes in section 9a, the SAE has the decision authority for LRIP quantity approval.

c. Foreign Military Sales/International Cooperative Programs -- None

d. Nuclear Costs -- None

e. References --

Development Estimate:

DAE Approved Acquisition Program Baseline dated January 25, 1995.

Approved Program:

DAE Approved Acquisition Program Baseline dated January 25, 1995.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>DCR Baseline</u> (JAN 95 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY95\$)	973.6	938.5	
(2) Quantity	95	95	
(3) Unit Cost	10.248	9.879	3.74
b. Procurement			
(1) Cost (BY95\$)	392.0	373.5	
(2) Quantity	95	95	
(3) Unit Cost	4.126	3.932	4.95

See section 16 for buy profile of modification kit quantities by fiscal year.

The B-1 CMUP-JDAM program consists of the following modifications: GPS/Communications (Comm)/Mil-Std 1760/JDAM carriage, and a Computer upgrade. The program will modify 95 aircraft, and will procure the same number of kits for GPS/Comm. The 1760/JDAM modifications will provide 126 launcher upgrade kits (O/I level installation) and the Computer upgrade will provide 95 kits for aircraft install (8 other kits will be purchased: 5 for simulators, 3 lab units). Fiscal year

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B-1 CMUP-JDAM, December 31, 1995

12. Unit Cost Summary (Cont'd):

buy schedules summarizing total kit quantities by year are in section 16c.

APB JAN 95 PER UNIT DATA:

1. Procurement quantities and Average Unit Procurement Cost (AUPC) data included in APB is:

	Qty	AUPC OBJ/THRESH (FY95 \$M)
GPS/Comm/JDAM/1760	95	2.080/2.392
Computer (Acrft/grnd spt)	103	1.690/1.944

2. AUPC for these modifications includes Group A&B kits costs and non-recurring costs such as initial spares, modification of spares, support equipment items, data, and installation. Based upon average kit procurement rates of 47/yr and 26/yr for GPS/Comm/JDAM/1760 and computer upgrades respectively.

3. GPS/Comm/JDAM/1760 upgrade kits consist of 95 aircraft kits plus 126 launcher modification kits. Computer upgrade kits consist of 103 kits (95 aircraft kits for install and 5 for simulators and 3 lab units).

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B-1 CMUP-JDAM, December 31, 1995

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	618.8	469.0	0.0	1087.8
Previous Changes:				
Economic	+0.5	+0.4	-	+0.9
Quantity	-	-	-	-
Schedule	-	-0.3	-	-0.3
Engineering	-	-	-	-
Estimating	+8.2	-	-	+8.2
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+8.7	+0.1	-	+8.8
Current Changes:				
Economic	-15.8	-28.6	-	-44.4
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	23.5	-	-	+23.5
Estimating	-11.4	14.3	-	+2.9
Other	-	-	-	-
Support	-	10.5	-	+10.5
Subtotal	-3.7	-3.8	-	-7.5
Total Changes	+5.0	-3.7	-	+1.3
Current Estimate	623.8	465.3	-	1089.1

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1995 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	565.0	373.5	0.0	938.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+7.9	-0.1	-	+7.8
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+7.9	-0.1	-	+7.8
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	21.6	-	-	+21.6
Estimating	-12.9	10.8	-	-2.1
Other	-	-	-	-
Support	-	7.8	-	+7.8
Subtotal	+8.7	+18.6	-	+27.3
Total Changes	+16.6	+18.5	-	+35.1
Current Estimate	581.6	392.0	-	973.6

b. Previous Change Explanations --

RDT&E

Economic: Updated since APB approval to reflect Jan 1995 inflation rates.

Estimating: The prior estimate was updated to reflect contract negotiated requirements.

Procurement

Economic: Updated since APB approval to reflect Jan 1995 inflation rates.

Schedule: MIL-STD 1760 and JDAM kit production moved from FY97 start to FY96.

Estimating: Base year dollars corrected for estimating error.

B-1 CNDP-JDAM, December 31, 1995

13c. Cost Variance Analysis (Cont'd):

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-15.8
Incorporation into JDAM integration efforts of Demand Assign Multiple Access/Advanced Narrowband Digital Voice Terminal, a SATCOM required communication upgrade. (Engineering)	+3.4	+3.5
Change in configuration of Conventional Bomb Module Test Set (CBMTS) for JDAM integration efforts. (Engineering)	+0.1	+0.1
Update of cost estimate to accommodate open architecture (i.e. 32-bit) solution and ADA conversion. (Engineering)	+18.1	+19.9
Adjustment for Current and Prior Inflation. (Estimating)	+2.7	+2.8
Incorporation of revised estimates for JDAM integration. (Estimating)	-15.6	-14.2
 RDT&E Subtotal	<u>+8.7</u>	<u>-3.7</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-28.6
Correction of previously reported variances to reconcile flyway and support cost. (Estimating)	+0.1	+0.2
(Support)	-0.1	-0.2
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.2
Revised estimates for GPS, JDAM, and computer. (Estimating)	+10.5	+13.9
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Estimate revised for new expenditures profiles for stock fund reimbursement for initial spares. (Support)	+1.0	+2.9

B-1 CMUP-JDAM, December 31, 1995

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Increased Peculiar support equipment requirements for JDAM/1760 and GPS mods. (Support)	+6.8	+7.7
Procurement Subtotal	<u>+18.6</u>	<u>-3.8</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
11.451	-0.458	-0.001	-0.003	0.247	0.117	--	0.111	0.013	11.464

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --			Initial Contract Price		
<u>CMUP RMD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Rockwell International, Seal Beach, CA			\$261.7	\$0.0	0
F33657-94-C-0001, CPAF					
Award: March 16, 1995					
Definitized: March 16, 1995					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$262.9	N/A	0	\$262.9	\$262.9	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$0.1	\$0.0	
Cumulative Variances To Date (12/29/95)			\$0.3	\$-0.2	
Net Change			\$0.2	\$-0.2	

Explanation of Change:

The cost and schedule variances are based on data from the program's Cost Performance Report (CPR) of 29 Dec 95. The small cost and schedule variances have no impact to the contract or program.

B-1 CMJP-JDAM, December 31, 1995

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 20.0% (3 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 18.8% (\$204.7 / \$1089.1)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2008)	<u>Total</u>
RDT&E	55.9	140.8	147.5	279.6	623.8
Procurement	-	8.0	20.7	436.6	465.3
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	55.9	148.8	168.2	716.2	1089.1

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expanded	

Appropriation: 3600 Research, Development, Test + Eval, AF

1994			0.9	0.9	0.9	0.9	0.9	2.0
1995			54.1	54.1	55.0	52.6	48.9	1.9
1996			135.6	135.6	140.8	26.2	6.0	2.0
1997			139.0	139.0	147.5			2.2
1998			107.6	107.6	116.8			2.3
1999			58.0	58.0	64.3			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obl- gated	Ex- pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2000			62.4	62.4	70.7			2.2
2001			24.0	24.0	27.8			2.2
Subtot			581.6	581.6	623.8	79.7	55.8	

Expenditures and obligations reflect program office records as of 31 Dec 95.

Appropriation: 3010 Aircraft Procurement, Air Force

1996	4	0.6	5.0	7.5	8.0			2.0
1997	22		16.8	18.9	20.7			2.2
1998	93	8.0	45.0	54.2	60.6			2.3
1999	69		64.5	68.6	78.3			2.2
2000	36		56.3	61.0	71.2			2.2
2001	17		25.6	28.7	34.2			2.2
2002	28		39.5	42.6	51.9			2.2
2003	29		43.7	46.2	57.6			2.2
2004	18		45.2	47.5	60.5			2.2
2005			5.6	8.0	10.4			2.2
2006			4.7	6.8	9.1			2.2

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY95 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3010 Aircraft Procurement, Air Force (Cont'd)

2007				1.3	1.8			2.2
2008				0.7	1.0			2.2
Subtot	316	8.6	351.9	392.0	465.3			
Grand Total	316	8.6	933.5	973.6	1089.1	79.7	55.8	

The B-1 CMUP-JDAM program consists of a Global Positioning System (GPS) with a Communication upgrade (Comm), a Mil-Std 1760 Weapon Interface Unit (1760) with rotary launcher modifications for JDAM carriage, and a computer upgrade. The quantities in Sec 16.C. table are the kit quantities (e.g. FY96 procures 3 JDAM/1760 launcher kits and 1 GPS/Comm kit). The GPS/Comm kit buy schedule (FY96-FY98) is 1,22,72 with installations (FY98-FY00) of 1,22,72 to comply with the GPS 2000 mandate. Installation funding is provided in the year install occurs. The 1760/JDAM buy schedule (FY96-FY00) 3,0,21,66,36 procures 126 rotary launcher kits and is an organizational/intermediate level installation. The computer upgrade will purchase 103 kits (FY99-FY04) 3,0,17,28,29,18, 95 for aircraft, 5 for simulators, 3 for labs. Aircraft installs (FY00-FY06) will be 3,0,3,28,28,29,4, and are funded in the year they occur. In FY05 and FY06 there are no quantity buys as funding is for modification kit installation only.

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

This estimate was prepared by ASC/ALTD as part of the Service Cost Position for the DAB Approved Acquisition Program Baseline dated 25 January 1995.

The B-1 CMUP-JDAM Cost Analysis Requirements Description and Service Cost Position estimate were used as the basis for this estimate. The HQ ACC/KPM Manpower Estimate Report was used with a "beddown" O&S Phase In of FY98-FY06 and Steady State FY07-FY26. A 1.48 Utilization Factor (Equip Op Hrs per Flying Hour) was used for 95 aircraft at 323/VE/Acft/Yr.

Per CAIG direction, O&S costs do not include software maintenance. Changes to the computer upgrade program now include conversion to ADA software. It is expected this new software will significantly reduce maintenance costs in future years, after completion of the computer upgrade. The O&S estimates here do not reflect these savings, since this cost element is not included.

There is no antecedent system.

b. Costs -- (FY 1995 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per 95 B-1 Aircraft CMUP Modifications	Avg Annual Cost Per Antecedent
Unit Mission Personnel	37.3	N/A
Unit Level Consumption	55.0	N/A
Sustaining Support	294.5	N/A
Indirect Support	1.5	N/A
System Wide MER Impacts	16.8	N/A
Total	405.1	N/A

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(Q&A)823)

PROGRAM: BFVS A3 Upgrade

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

Bradley Fighting Vehicle Systems (BFVS) A3 Upgrade

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army Tank-Automotive Command COL Joseph L Yakovac
 PM, Bradley Fighting Vehicle Systems Assigned: August 22, 1994
 ATTN: SFAE-ASM-BV AV 786-5630 COMM (313) 574-5630
 Warren, MI 48397-5000

4. Program Elements/Procurement Line Items:

RDT&E:

PE 23735 Project 371, 332

PROCUREMENT:

APPN 2033 ICN G80717 (Army)
 APPN 2033 ICN G20900 (Army) (Shared)

5. Related Programs:

Multiple Launch Rocket System (MLRS), TOW-2 Subsystem, Command and Control Vehicle (C2V), Electronic Fighting Vehicle Systems (EFVS), Improved Bradley Acquisition System (IBAS), Horizontal Technology Integration (HTI) Second Generation Forward Looking Infrared (FLIR).

6. Mission and Description:

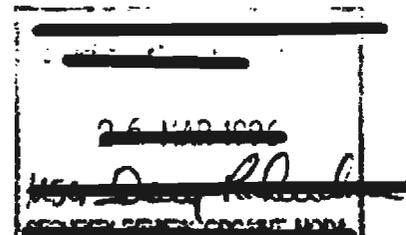
The upgraded Bradley Fighting Vehicle (BFV), M2A3 Infantry Fighting Vehicle (IFV) and M3A3 Cavalry Fighting Vehicle (CFV) will

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6. Mission and Description (Cont'd):

facilitate enhanced command and control, provide greater lethality, provide mobile protected transport of an infantry squad to critical points on the battlefield and perform cavalry scout and other claimant (Bradley equipped Fire Support and Stinger Teams) missions in the 21st century. Upgrades in this program include advanced technology in the areas of command and control, lethality, survivability, mobility, and sustainability required to defeat current and future threat forces while remaining operationally compatible with the main battle tank. The M2A3/M3A3 will provide overwatching fires to support the dismounted infantry, and suppress/defeat enemy tanks, reconnaissance vehicles, IFV, armored personnel carriers, bunkers, dismounted infantry, and attack helicopters. The infantry version (M2A3) of the A3BFV is used most often to close with the enemy by means of fire and maneuver. The primary tasks performed by the cavalry version (M3A3) as part of a troop and/or squadron are reconnaissance, security, and flank guard missions. The Bradley Fire Support Team vehicle (BFIST) variant acquires targets and coordinates all indirect fire support assets. The Stinger claimant version provides close in air defense from aerial attack, missile attack, and surveillance.

7. Program Highlights:

a. Significant Historical Developments --

The Bradley A3 effort is part of the overall Bradley Modernization program aimed at upgrading the existing fleet by correcting deficiencies identified in the 1994-2008 Battlefield Development Plan, while accomplishing the intent of the Bradley Base Sustainment Program approved by the Secretary of Defense as part of the FY94 Amended Budget Submission. The BFVS is on the Department of the Army's Industrial Preparedness Planning List, making it essential to the Army combat needs to domestically manufacture/remanufacture these vehicles. Acquisition Decision Memorandum (ADM) approval was received on Mar 29, 1994.

b. Significant Developments Since Last Report --

The Preliminary Design Review (PDR) was successfully completed in Jul as planned. The Critical Design Review (CDR), scheduled for Dec, was postponed until Jan 96. This was necessary to allow all major subsystems to complete their CDRs. The Commander's Independent Viewer, a major subsystem of A3, delivered its emulator to the System Integration Laboratory (SIL) in Oct. The Improved Bradley Acquisition System (IBAS), another major subsystem of the A3, delivered its advanced prototype to the SIL in Dec. The Position/Navigation (POS/NAV) system and the Power Control Module (PCM) also made the prototype deliveries to the SIL in 1995. Integration challenges with 2nd Generation Forward Looking Infra-red (FLIR) Horizontal Technology Integration (HTI) B-kit provided a management

BFVS A3 Upgrade, December 31, 1995

7b. Program Highlights (Cont'd):

challenge to reduce the impact to the A3 schedule. Working closely with PM-FLIR, PM-CCAWS, and the contractor community, work arounds were developed and implemented to ensure that the integration of the FTI B-kit is accomplished on schedule and that the first Bradley A3 prototype vehicle delivery in Aug 96 remained unaffected.

The BFVS A3 Upgrade is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There is a cost breach (greater than 5% total procurement) to the Approved Acquisition Program Baseline (APB) dated March 29, 1994, and a Program Deviation report will be submitted. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone IV	JAN 94	JAN 94	JAN 94
Development Contract Award	APR 94	MAY 94	MAY 94
Preliminary Design Review	JUN 94	MAR 95	JUL 95
Critical Design Review	OCT 94	SEP 95	JAN 96 (Ch-1)
1st Low Rate Initial Production (LRIP Award)	FEB 96	JUL 97	JUL 97
Pre-Production Qualification Test (PPQT)			
Start	AUG 95	OCT 96	OCT 96
Complete (Government)	MAY 96	JUL 97	JUL 97
2nd LRIP Award	OCT 96	MAY 98	MAY 98
PQT			
Start	NOV 97	OCT 98	OCT 98
Complete	JUN 98	JUL 99	AUG 99
1st LRIP Vehicle Deliveries	AUG 97	OCT 98	OCT 98
3rd LRIP Award	OCT 97	DEC 98	DEC 98
2nd LRIP Vehicle Deliveries	MAY 98	AUG 99	AUG 99
Initial Operation Test & Evaluation (IOT&E)			
Start	FEB 98	MAR 99	MAR 99
Complete	JUN 98	JUL 99	JUL 99
First Unit Equipped (FUE)	SEP 98	APR 00	AUG 00
Milestone III	NOV 98	NOV 99	NOV 99
3rd LRIP Vehicle Deliveries	MAY 00	APR 00	APR 00

BFVS A3 Upgrade, December 31, 1995

9b. Schedule (Cont'd):

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Ch-1) System CDR delayed from Dec 95 to Jan 96 to allow all major subsystems to complete their CDR's.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Command and Control:				
The command & control system must comply with the Army Standard Protocol	MIL-STD-188-220	MIL-STD-188-220 / MIL-STD-188-220	TBD	MIL-STD-188-220
The command & control system must communicate fully with the command and control system employed by the armored forces	Combined Arms Command and Control	Combined Arms Command and Control / Army Brigade and below	TBD	Future Battle Command Brigade and Below
Lethality:				
Improve the target acquisition and fire control system	Dual track and auto track with IBAS and CIV	Dual track and auto track with IBAS and CIV / Dual track and auto track with IBAS	TBD	Dual track and Auto track with IBAS
Survivability:				

BFVS A3 Upgrade, December 31, 1995

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
NBC protection for dismount element while in vehicle	Ventilated face pieces	Ventilated face pieces	/ Ventilated face pieces	TBD	Ventilated Face Pieces
Mobility:					
Ability of the BFVS to navigate in all weather conditions with GPS (accuracy plus or minus in meters)	16	16	/ 16	TBD	16
The driver display will present navigational information and map	GPS information and map	GPS Information and map	/ GPS Information	TBD	GPS Information
Maintain cross-country mobility with main battle tank	M1A2 Tank	M1A2 Tank	/ M1A2 Tank	TBD	M1A2 Tank
RAM (Mean Miles Between Failure)	N/A	500	/ 400	TBD	400
Integrated Logistics Support:					
Systems fault isolation capability to provide unambiguous fault isolation to: Mission critical Line Replaceable Units (LRU) (% of the time)	95	95	/ 95	TBD	95
Non-Mission critical LRUS (% of the time)	90	90	/ 90	TBD	90

The EMD testing phase is planned to occur Nov 96 through Sep 97. At completion of the testing, demonstrated performance will be determined and reported.

BFVS A3 Upgrade, December 31, 1995

10b. Performance Characteristics (Cont'd):

b. Previous Change Explanations --

Combined/Arms Command and Control changed to Future Battle Command Brigade and Below to be consistent with the Army Digitization Master Plan.

Reliability measure added in revised APB (Mar 29, 1994) to assure that current Reliability, Availability, and Maintainability (RAM) performance is maintained.

c. Current Change Explanations -- None.

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	394.1	394.1	418.7
Procurement	2703.2	2703.2	3036.7
Non-recurring	(27.9)		(12.4)
Recurring	(2476.8)		(2767.6)
Total Rollaway	(2504.7)		(2780.0)
Training Devices	(53.1)		(59.4)
Other	(58.2)		(85.6)
Total Other Wpn Sys	(111.3)		(145.0)
Peculiar Support	(40.1)		(48.7)
Initial Spares	(47.1)		(63.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 94 Base-Year \$	3097.3	3097.3	3455.4
 Escalation	 941.5	 941.5	 670.5
Development (RDT&E)	(31.4)	(31.4)	(27.8)
Procurement	(910.1)	(910.1)	(642.7)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	4038.8	4038.8	4125.9

BFVS A3 Upgrade, December 31, 1995

11b. Total Program Cost and Quantity (Cont'd):

b. Quantity --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	2	2	0
Procurement	<u>1600</u>	<u>1600</u>	<u>1602</u>
Total	1602	1602	1602

Note: Excludes 8 RDTE prototypes from the SAR Baseline and 8 from the Current Estimate that are not considered fully configured.

Two fully configured vehicles originally planned to be funded by RDT&E are now going to be funded by the Procurement Appropriation.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated March 8, 1994.

Approved Program:

AAE Approved Acquisition Program Baseline dated March 29, 1994.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 94 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY94\$)	3455.4	3097.3	
(2) Quantity	1602	1602	
(3) Unit Cost	2.157	1.933	11.56
b. Procurement			
(1) Cost (BY94\$)	3036.7	2703.2	
(2) Quantity	1602	1600	
(3) Unit Cost	1.896	1.690	12.20

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BFVS A3 Upgrade, December 31, 1995

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	425.5	3613.3	0.0	4038.8
Previous Changes:				
Economic	-0.1	+8.6	-	+8.5
Quantity	-3.1	+4.8	-	+1.7
Schedule	-	+144.2	-	+144.2
Engineering	-	+108.6	-	+108.6
Estimating	+31.6	-38.6	-	-7.0
Other	-	-	-	-
Support	-	+95.4	-	+95.4
Subtotal	+28.4	+323.0	-	+351.4
Current Changes:				
Economic	-11.8	-276.5	-	-288.3
Quantity	-	-	-	-
Schedule	-	-217.7	-	-217.7
Engineering	-	-	-	-
Estimating	4.4	248.7	-	+253.1
Other	-	-	-	-
Support	-	-11.4	-	-11.4
Subtotal	-7.4	-256.9	-	-264.3
Total Changes	+21.0	+66.1	-	+87.1
Current Estimate	446.5	3679.4	-	4125.9

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1994 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	394.1	2703.2	0.0	3097.3
Previous Changes:				
Quantity	-3.0	+3.0	-	-
Schedule	-	-	-	-
Engineering	-	+77.5	-	+77.5
Estimating	+23.4	-8.2	-	+15.2
Other	-	-	-	-
Support	-	+55.6	-	+55.6
Subtotal	+20.4	+127.9	-	+148.3
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	4.2	203.0	-	+207.2
Other	-	-	-	-
Support	-	2.6	-	+2.6
Subtotal	+4.2	+205.6	-	+209.8
Total Changes	+24.6	+333.5	-	+358.1
Current Estimate	418.7	3036.7	-	3455.4

b. Previous Change Explanations --

RDT&E

Quantity: Quantity variance resulting from transfer of two units to procurement

Estimating: Revised estimate due to change in methodology. Inclusion of OPTEC funding.

Procurement

Quantity: Quantity variance resulting from transfer of two units from RDT&E.

Schedule: FUE schedule change from FY98 to FY00.

Engineering: Addition of Pontoons for swim capability and of armor hatches.

Estimating: Revised estimates based on change in methodology.

BFVS A3 Upgrade, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

Support: Revised schedule related to support requirement.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-11.8
Adjustment for Current and Prior Inflation. (Estimating)	+4.2	+4.4
 RDT&E Subtotal	<u>+4.2</u>	<u>-7.4</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-342.9
Economic adjustment for negative program change. (Economic)	N/A	+66.4
Revised estimate to accelerate procurement buy profile. (Schedule)	--	-217.7
Revised estimate to accelerate engine procurement buy profile. (Estimating)	-0.5	-1.4
Revised vehicle estimate to capture business base impact of eliminating AGS (Estimating)	+57.4	+66.2
Revised 2nd Gen FLIR estimate to capture business base impact of eliminating AGS (Estimating)	+27.6	+35.2
Increased estimates of components due to higher than expected prototype costs (Estimating)	+118.5	+148.7
Decrease in estimated cost to initial spares (Support)	-3.4	-7.7
Decrease in estimated cost of peculiar support equipment (Support)	-2.4	-4.7
Changes in estimates to training devices, New Equipment Training (NET), and Contractor Logistics Support (CLS). (Support)	+8.4	+1.0
 Procurement Subtotal	<u>+205.6</u>	<u>-256.9</u>

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
2.521	-0.175	0.001	-0.046	0.068	0.154	--	0.052	0.054	2.575

15. Contract Information (Then-Year Dollars in Millions):

a. RDT&E --

A3 EMD:

United Defense (LP), San Jose, CA
DAAE07-94-C-0456, CPIF
Award: May 19, 1994
Definitized: June 30, 1995

Initial Contract Price	Qty		
		Target	Ceiling
\$280.0	8	N/A	

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$278.0	N/A	8	\$278.0	\$288.2

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$2.8	\$-3.8
Cumulative Variances To Date (12/30/95)	\$-4.5	\$-7.2
Net Change	\$-7.3	\$-3.4

Explanation of Change:

The unfavorable cost variance is due to increased personnel staffing and additional design changes resulting from change to 2nd Gen FLIR. The unfavorable schedule variance is due to the behind schedule position of three sub-components. The first vehicle prototype delivery in August 96 remains unaffected by the schedule variance.

IBAS EMD:

Texas Instruments, McKinney, TX
DAAH01-93-C-0206, CPIF/AF
Award: February 18, 1994
Definitized: July 20, 1994

Initial Contract Price		
Target	Ceiling	Qty
\$51.7	N/A	16

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15. Contract Information (Cont'd):

<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$59.1	N/A	14	\$61.9	\$63.3
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$1.0	\$-1.4
Cumulative Variances To Date (12/31/95)			\$-3.0	\$-0.9
Net Change			\$-4.0	\$0.5

Explanation of Change:

The unfavorable cost variance is due to a significant increase in software lines of code, an unscheduled interim software release to support SIL requirements and increased hours to support hardware and software integration in prototype unit #1. The favorable schedule variance is due to a replanned schedule from 41 months to 48 months and solving a delivery problem.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 23.1% (3 yrs/13 yrs)
- (2) Percent Program Cost Appropriated: 6.1% (\$252.4 / \$4125.9)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY94-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2006)	<u>Total</u>
RDT&E	137.8	114.6	89.2	104.9	446.5
Procurement	-	-	127.5	3551.9	3679.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	137.8	114.6	216.7	3656.8	4125.9

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16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1994				60.5	61.5	61.2	57.9	2.0
1995				73.6	76.3	75.9	51.3	1.9
1996				108.2	114.6	33.5	0.1	2.0
1997				82.4	89.2			2.2
1998				59.9	66.3			2.2
1999				33.6	38.0			2.3
2000				0.5	0.6			2.2
Subtot				418.7	446.5	170.6	109.3	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh

1997	27	9.9	103.1	115.1	127.5			2.2
1998	38	2.5	121.7	140.3	158.9			2.2
1999	125		286.3	310.0	358.7			2.3
2000	312		567.5	600.5	710.2			2.2
2001	414		658.4	695.1	840.1			2.2
2002	250		385.3	429.3	530.3			2.2
2003	250		369.3	396.7	500.8			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY94 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2033 Proc of Weapons & Tracked Combat Veh (Cont'd)

2004	186		276.0	300.4	387.6			2.2
2005				40.3	53.2			2.2
2006				9.0	12.1			2.2
Subtot	1602	12.4	2767.6	3036.7	3679.4			
Grand Total	1602	12.4	2767.6	3455.4	4125.9	170.6	109.3	

17. Production Rate Data:

- a. Deliveries to Date -- 0/0.
- b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

- a. Assumptions and Ground Rules --

Operation and support costs reflect world wide regular Army activity and are presented as an estimate of the average annual cost per fielded M2A3 and M3A3. These costs assume an average operating tempo of 880 miles per year (per ODCSOPS Training Directorate). The source for this cost estimate is the A3 Army Cost Position (ACP), dated January 1994. There is no antecedent.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1994 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost/Veh Reg Army M2A3/M3A3	Avg Annual Cost/Veh (Antecedent)
Personnel	39.8	N/A
O&S Consumables	27.6	N/A
Direct Depot Maintenance	4.5	N/A
Other Direct Costs	7.6	N/A
Indirect Costs	3.0	N/A
Total	82.5	N/A

c. Contractor Support Costs -- None.

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A-18 MCS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: MCS

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
MANEUVER CONTROL SYSTEM (MCS)

2. DoD Component: Army

3. Responsible Office and Telephone Number:
PM-OPTADS, SFAE-C3S-MVR COL STANLEY C LEJA
FORT MONMOUTH, NJ 07703-5405 Assigned: August 24, 1995
AV 992-4041 COMM 908-532-4041

4. Program Elements/Procurement Line Items:

RDT&E:
PE 23740 (Shared) Project D484, D2HT
PROCUREMENT:
APPN 2035 ICN BA9320 (Army)
APPN 2035 ICN BA9710 (Army)
APPN 2035 ICN BS9710 (Army)

5. Related Programs:
ARMY TACTICAL COMMAND AND CONTROL SYSTEMS (ATCCS) - COMMON HARDWARE SOFTWARE (CHS) and STANDARD INTEGRATED COMMAND POST SYSTEM.

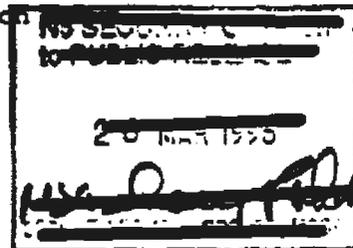
6. Mission and Description:
The Maneuver Control System (MCS) is one of the five Battlefield Functional Areas (BFA) of the Army Tactical Command and Control Systems (ATCCS). MCS is a network of computer equipment which

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6. Mission and Description (Cont'd):

serves the Commander and Staff Corps, Division, Brigade, and Maneuver Battalion. The system provides automated assistance in the coordination of plans, dissemination of orders and guidance, and the monitoring and supervision of operations. MCS is the force level commander's information system and integrates the maneuver functions with the automated or manual Command and Control (C2) systems of the other four functional areas. (The other four functional areas are: Fire Support, Air Defense, Intelligence/Electronic Warfare, and Combat Service Support). MCS versions of software will extend automated command and control capabilities down to battalion/squadron, company/troop, squad/weapon system and platoon level through the subordinate systems to MCS.

The Maneuver Control System (MCS) is a collection of computer equipment which supports operation planning and control at one of the five nodal points (Maneuver Control) of the Army Tactical Command and Control System (ATCCS). MCS currently consists of the Non-Development Items (NDI) such as the Tactical Computer Processor (TCP) nomenclatured AN/UYQ-43(V)1. It is a microprocessor based portable system which provides automated assistance to the maneuver commanders. The Analyst Console (AC) nomenclatured AN/UYQ-43(V)2, is a microprocessor based intelligent terminal, connected to the TCP via Local Area Network, which provides multiple workstations within a nodal configuration.

The TCP/AC were transitioned with currently fielded software Version 10.03.1G1, from OPM OPTADS to the Communications-Electronics Command (CECOM) on Oct 4, 1992. The NDI equipment (TCP/AC) will be replaced by Common Hardware (CH). CH is composed of CHS-2 computers which will exceed the capability and the processing of the TCP/AC. These devices are to be fielded to all US Army Tactical Units. They are smaller and lighter and provide ease of transportability to all ATCCS users.

7. Program Highlights:

a. Significant Historical Developments --

In 1980, the first elements of the MCS were fielded to VII Corps in Europe, which consisted of Engineering models of the AN/UYQ-30 Tactical Computer Terminal (TCT) with a limited Command, Control and Communications (C3) capability. In 1981 the system was enhanced with additional TCT's and increased software C3 capabilities. In 1982, the MCS program was continued by awarding a MCS System Engineering/Integration and Software Development contract which was awarded to Ford Aerospace and Communication Corporation (FACC). This five year effort continued the MCS evolutionary development. By 1986 the software had evolved to Version 9, was written in Ada, fielded with production TCTs in Europe, and ported to the Tactical

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7a. Program Highlights (Cont'd):

Computer Processor (TCP) prototype. In 1986 the production contract for the AN/UYQ-43 (V)1/(V)2 TCP/AC Non- Developmental Item (NDI) was awarded. In 1987 the second five year evolutionary development effort was awarded to FACC (now Loral Command and Control Systems) for the software effort and a separate contract was awarded to TRW for the system engineering/integration effort. Under these efforts, Version 10 software was completed, and fielded in 1989.

MCS Version 11 software development effort was continued under Loral. However, Loral experienced significant delays in their development effort. As a result, there was little confidence in Loral's ability to deliver Version 11 without further schedule slips and cost growth. The decision was made by the Army to discontinue funding the contract. The Army decided the MCS requirements could best be satisfied by an alternative other than continuing the Loral contract effort. The decision to discontinue the development contract beyond the current target contract price, was approved by the Army Acquisition Executive via a memorandum dated February 24, 1993.

A restructured MCS program strategy was presented to and approved in concept by the OSD C3I Committee on March 11, 1993. OSD formal approval was received via an Acquisition Decision Memorandum (ADM) dated April 6, 1993. The revised approach to complete Block III development is described as MCS Version 12.0. Version 12.0 is a rapid prototype effort which relies on Common Hardware, and a foundation of Common Operating Environment (COE) to support standalone applications which provide an initial maneuver control capability, supports horizontal interoperability testing with other BFA control systems, and exploits reusable software from MCS Version 11.0.

In August 1994 MCS V12.0 successfully completed an Integrated Interoperability Demonstration (as an MCS Operational Assessment) which was included as a part of the ATCCS level testing at Fort Hood, Texas. The MCS Operational Requirements Document (ORD) (October 26, 1992) remains valid for Version 12.0. The PEO C3S directed the FM OPTADS to replan the program on December 22, 1994, due to the continued delays in the CHS-2 hardware contract award. This direction required substituting a Limited User Test (LUT) for the the IOT&E. Also, the program was to proceed toward a Low Rate Initial Production (LRIP) decision to procure CHS-2 hardware to be used for the MCS IOT&E. This program strategy was subsequently changed when the MCS program came under the Integrated Product Team process in May 1995.

The 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 will reside on the software foundation developed under Block III. Block IV encompasses development of MCS software

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7a. Program Highlights (Cont'd):

versions 12.1, 12.2 and 12.3 and fielding of this upgraded functionality to the Army, once each of the three versions have successfully passed a Follow On Test and Evaluation (FOT&E). Software enhancements in Version 12.1 through 12.3 include developing and analyzing basic course of action wargaming, and embedded training at the operator and staff section level.

b. Significant Developments Since Last Report --

Due to the continued delays in the CHS-2 contract award, PM OPTADS was re-directed to re-plan the MCS program in accordance with guidance provided by the DISC4 General Officer In-Process-Review on Army Tactical Command and Control System tests dated 4 May 1995. An OSD chaired Integrated Product Team (IPT) was established for this purpose. To reduce test costs in FY95 and to accomodate early conversion to CHS-2, PM OPTADS planned and executed a System Segment Acceptance Test in February 1996 and will execute a Customer Test in April 1996 of the MCS Block III system in lieu of the Limited User Test projected for November 1995. MCS V12.01 will now undergo an IOT&E in November 1996. The November 1995 Overarching Integrated Product Team (OIPT), resulted in the approval of the Acquisition Program Baseline (APB) and the Acquisition Strategy Report (ASR), the authorization to release the Block IV Request for Proposal (RFP) and for a limited release of MCS Phoenix "Beta) software to selected units for experimentation/evaluation and user feedback into software development.

MCS is expected to satisfy mission requirements.

c. Changes Since As Of Date -- None

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated December 18, 1995. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
BLOCK I			
AN/UYQ-30/30A			
Milestone III ASARC	MAY 83	MAY 83	MAY 83
Initial Prod Contract Award	JUN 83	N/A	N/A (Ch-1)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate	
First Prod Del Initial Contr	FEB 85	N/A	N/A	(Ch-1)
Follow-on Prod Contr Award	AUG 86	N/A	N/A	(Ch-1)
FUE/IOC	SEP 86	SEP 86	SEP 86	
Version 9 Software Release	SEP 86	SEP 86	SEP 86	
User Follow-on Test & Eval I	APR 87	APR 87	APR 87	
First Prod Deliv Follow Contr	NOV 87	N/A	N/A	(Ch-1)
BLOCK II				
AN/UYQ-43 (V)1&(V)2				
IPR Approval	JUN 86	JUN 86	JUN 86	
Initial Production Contract Award	JUN 87	N/A	N/A	(Ch-1)
First Article Test				
Start	MAY 88	MAY 88	MAY 88	
Complete	SEP 88	SEP 88	SEP 88	
Production Contract Option Award	SEP 88	N/A	N/A	(Ch-1)
Version 10 Software Release	OCT 88	OCT 88	OCT 88	
First Prod Deliv Initial Contr	FEB 89	N/A	N/A	(Ch-1)
FUE\IOC	APR 89	APR 89	APR 89	
First Prod Deliv Prod Option	JUN 89	N/A	N/A	(Ch-1)
Field Validation	AUG 89	AUG 89	AUG 89	
BLOCK III				
AN/TYQ-45 (CHS)				
CHS Software Verification Test	MAY 91	N/A	N/A	
FUE/IOC	NOV 91	N/A	N/A	
Follow-on Test & Evaluation	JAN 92	N/A	N/A	
Milestone III ASARC	MAY 92	N/A	N/A	
First MCS Prod Buy of CHS	JUN 92	N/A	N/A	
First Production Deliveries	OCT 92	N/A	N/A	
Software Releases				
Version 9	SEP 86	N/A	N/A	(Ch-1)
Version 10	OCT 88	N/A	N/A	(Ch-1)
Version 11 (30/30A & 43 (V) 1&2)	NOV 90	N/A	N/A	
Version 11 (CHS)	SEP 91	N/A	N/A	
First CHS Prototype Delivery (BuildI)	DEC 88	DEC 88	DEC 88	
MCS Version 12.0				
MCS Integration and Validation	N/A	SEP 93	SEP 93	
Compliance Test				
MCS V12.0 Operational Assessment	N/A	AUG 94	AUG 94	
MCS Version 12.01				
System Segment Acceptance Test-1	N/A	FEB 96	FEB 96	(Ch-2)

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
V12.01 IOT&E			
Start	N/A	NOV 96	NOV 96
Complete	N/A	FEB 97	FEB 97
Milestone III DAB	N/A	JUN 97	JUN 97
Issue V12.01 to the Field	N/A	NOV 97	NOV 97 (Ch-2)
IOC	N/A	JUN 98	JUN 98 (Ch-3)
BLOCK IV			
AN/TYQ-45 (CHS)			
Award MCS Contract	N/A	JUL 96	JUL 96 (Ch-3)
MCS Version 12.1			
FOTE	N/A	JUN 98	JUN 98 (Ch-3)
Issue V12.1 to the Field	N/A	OCT 98	OCT 98 (Ch-2)
MCS Version 12.2			
FOTE	N/A	JUN 99	JUN 99 (Ch-3)
Issue V12.2 to the Field	N/A	OCT 99	OCT 99 (Ch-2)
MCS Version 12.3			
FOTE	N/A	JUN 00	JUN 00 (Ch-3)
Issue V12.3 to the Field	N/A	OCT 00	OCT 00 (Ch-2)
Convert to Post Deployment Software Support (PDSS)	N/A	NOV 00	NOV 00 (Ch-2)

b. Previous Change Explanations --

The schedule dates were changed from the SAR baseline (Dec 91) due to a program restructure. The CHS SW Verification Test, FUE/IOC were no longer applicable because the verification/testing concept changed from separate hardware and software to a systems testing, which consists of Common Hardware and V11 Software. The FOT&E schedule date was not applicable because the initial test performed in Europe for the V10 Software, hosted on the TCT equipment, was considered equivalent to an IOT&E, therefore, in the 89 Acquisition Program Baseline (APB) the next schedule test was an FOT&E. That test was considered inappropriate for the current program strategy. IOT&E was added because it is required prior to the production decision for the CH equipment and V11 Software, therefore the May 93 date was reflected as a current estimate. Version 11 schedule date changed from Sep 91 to Feb 93 due to major factors in the slippage of V11 Software. In FY-91 a congressional funding reduction (\$8.6M) led to a scope reduction of work efforts by the software development contractor. There were technical difficulties in the development of the system and communications software using Commercial Off The Shelf (COTS) software. There was also a fire at the software contractor's facility, which caused disruption and slippage in schedule. There

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9b. Schedule (Cont'd):

were subsequent briefings to the Management Review Panel (MRP) (25 Nov 92 and 11 Feb 92) on the MCS software development status by FM OPTADS. The MRP did not recommend approval of the MCS APB until the schedule and technical assessment of the contractors effort met the software deliveries for the Early User Test and Evaluation in Sept 92 and the Initial Operation Test and Evaluation in May 93.

Milestones were added to the Dec 92 SAR, with the approval of the APB dated 6 June 1992. Due to Loral's failure to deliver Version 11 software on schedule and within cost, a decision was made by DA to discontinue funding Version 11 software development effort. This caused milestone schedule breaches to the Acquisition Program Baseline (APB) dated 6 June 1992 and the reason for the current estimate showing N/A's. A program deviation report was prepared and MCS APB was revised.

Dec 94 SARs current milestones represented the PEO-CCS directed re-planned program supported by the President's Budget Feb 1995. A revised MCS APB was in process.

c. Current Change Explanations --

(Ch-1) - These schedule milestones are no longer being tracked.

(Ch-2) These schedule milestones are new and were introduced as a result of the new approved APB dated December 18, 1995.

(Ch-3) - The schedule milestones listed below changed as a result of the re-planned program according to guidance provided by the DISC4 general officer In-Process Review as follows:

	From	To
Block III - IOC	Nov 97	Nov 98
Block IV - Award MCS Contract	May 96	Jul 96
MCS Version 12.1 FOTE	Aug 98	Jun 98
MCS Version 12.2 FOTE	Aug 99	Jun 99
MCS Version 12.3 FOTE	Aug 00	Jun 00

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 16 October 1989.

Approved Program:

DAE Approved Acquisition Program Baseline dated December 18, 1995.

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10. Performance Characteristics:

a. Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
BLOCK I						
AN/UYQ-30/30A						
100% Memory Retention during power fluc/loss (at least xx mins)	5	5	/ 5	10	5	
Purge Memory (within xx mins)	3	3	/ 3	1.57	3	
Mean Time to Repair (hrs)						
Organizational	.5	.5	/ .5	.5	.5	
Direct Support	2.0	2.0	/ 2.0	2.0	2.0	
Reliability (hrs)						
AN/UYQ-30/30A TCT	433	433	/ 433	433	433	
AN/UYQ-30/30A TCT'	310	310	/ 310	310	310	
Operational Availability (Ao)						
AN/UYQ-30 TCT	.88	.88	/ .88	.88	.88	
AN/UYQ-30 TCT'	.84	.84	/ .84	.84	.84	
BLOCK II						
AN/UYQ-43 (V)1 & (V)2						
100% Memory Retention during power fluc/loss (at least xx mins)	5	5	/ 5	10	5	
Emergency Purge Memory (within xx mins)	3	3	/ 3	1.32	3	
Mean Time to Repair						
Organizational (Hr)	.5	.5	/ .5	.5	.5	
Operational Availability (Ao)	.76	.76	/ .76	.76	.76	
BLOCK III						
AN/TYQ-45 (CHS)						
100% Memory Retention during power fluc/loss (at least xx mins)	5	N/A	/ N/A	N/A	N/A	(Ch-1)
Purge Memory (within xx mins)	3	N/A	/ N/A	N/A	N/A	(Ch-1)
Mean Time to Repair Organizational (Hr)	.5	N/A	/ N/A	N/A	N/A	(Ch-1)
Situation Awareness	N/A			TBD		

MCS, December 31, 1995

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Integrity of Common Picture %	N/A	95	/ 85	TBD	95	(Ch-2)
Between Div and Corps Main (sec)	N/A	7200	/ 7200	TBD	7200	(Ch-2)
Between Adjacent Echelons or Among TAC/Main/Rear Within an Echelon (sec)	N/A	3600	/ 3600	TBD	3600	(Ch-2)
Interoperability						
Direct Data Exchange Integrity IAW Applicable UIRs %	N/A	95	/ 85	TBD	95	(Ch-2)
Continuity of Operations						
Commander's Situation Report Availability After:						
Planned Outage (min)	N/A	90	/ 90	TBD	90	
Unplanned Outage (min)	N/A	180	/ 180	TBD	180	
Operational Availability (Ao)	.88	.88	/ .76	.76	.88	
BLOCK IV						
AN/TYQ-45 (CHS)						
100% Memory Retention during power fluc/loss (at least xx mins)	5	N/A	/ N/A	N/A	N/A	(Ch-1)
Purge Memory (within xx mins)	3	N/A	/ N/A	N/A	N/A	(Ch-1)
Mean Time to Repair Organizational (Hrs)	.5	N/A	/ N/A	N/A	N/A	(Ch-1)
Situation Awareness						

MCS, December 31, 1995

10a. Performance Characteristics (Cont'd):

	<u>DE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Integrity of "Common Picture" (Assumes COE compliant input from external sources) †	N/A	100	/ 95	TBD	100	(Ch-2)
Between Army and Joint Echelons (sec)	N/A	8	/ 1800	TBD	8	(Ch-2)
Adjacent Army and Joint Echelons (sec)	N/A	8	/ 900	TBD	8	(Ch-2)
Within Army and Joint Echelons (sec)	N/A	8	/ 900	TBD	8	(Ch-2)
Interoperability Direct Data Exchange Integrity IAW DoD COE Standards (†)	N/A	100	/ 95	TBD	100	(Ch-2)
Continuity of Operations (hrs) Commander's Situation Report Availability After:						
Planned Outage (min)	N/A	15	/ 30	TBD	15	(Ch-3)
Unplanned Outage (min)	N/A	45	/ 60	TBD	45	(Ch-3)
Operational Availability (Ao)	.88	.88	/ .76	.76	.88	

NOTE:

- 1/ (Development Baseline - October 16, 1989) Purging System Memory - Purge the system, memory, excluding tape, within 3 minutes.
- 2/ (Development Baseline - October 16, 1989) User has not established a required Ao for the MCS system
- 3/ (Development Baseline - October 16, 1989) Continuity of Operations - Data elements in maneuver, enemy, NBC, and other data base partitions shall not display more than 1 hour difference in age between same echelons CPs, while their CPs are operational in 80% of the sample.

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10a. Performance Characteristics (Cont'd):

4/ (Development Baseline - October 16, 1989) Fidelity - That which is transmitted, is transmitted with a least 95% fidelity.

5/ (Development Baseline - October 16, 1989) Quality - Data concerning current location and status of a maneuver battalion shall not be more than 4 hrs old at Corps, 2 hrs old at Division and 1 hr old at Brigade.

6/ Contract Specs - Performance parameters are consistent with the MCS ORD for Block IV. Contract Specs are not applicable for Operational Availability because the equipment is in the hands of the unit and beyond the control of the contractor.

b. Previous Change Explanations --

The Dec 94 SAR added performance parameters, which represented the PEO CCS directed re-planned program and were consistent with DA2028 changes that updated the MCS ORD for Block IV.

c. Current Change Explanations --

(Ch-1) - These parameters are no longer being tracked.

(Ch-2) - These parameters were added based on the approved MCS ORD and the revised APB approved on December 18, 1995.

(Ch-3) - Based on the MCS ORD and the revised APB, the listed parameters changed as follows:

Block IV	From	To
Continuity of Operations		
Commander's Situation Report		
Availability After:		
Planned Outage	60 min	15 min
Unplanned Outage	120 min	45 min

d. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated 16 October 1989.

Approved Program:

DAE Approved Acquisition Program Baseline dated December 18, 1995.

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11. Total Program Cost and Quantity (Current Dollars in Millions):

	Development	Approved	Current
a. Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	215.2	259.2	269.4
Procurement	545.5	347.3	359.5
Flyaway	(451.3)		(0.0)
Flyaway			(291.7)
Total Flyaway	(451.3)		(291.7)
Support Fielding Costs			(27.8)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(94.2)		(40.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 80 Base-Year \$	760.7	606.5	628.9
 Escalation	 511.4	 386.1	 392.3
Development (RDT&E)	(123.1)	(160.2)	(163.0)
Procurement	(388.3)	(225.9)	(229.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1272.1	992.6	1021.2
 b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>6365</u>	<u>3156</u>	<u>3156</u>
Total	6365	3156	3156

A unit of measure equates to one MCS Tactical High Capacity Computer Suite including installation kits, peripherals and common off-the-shelf software.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Development Estimate:

AAE Approved Acquisition Program Baseline dated October 16, 1989.

Approved Program:

DAE Approved Acquisition Program Baseline dated December 18, 1995.

MCS, December 31, 1995

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (DEC 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY80\$)	628.9	606.5	
(2) Quantity	3156	3156	
(3) Unit Cost	0.199	0.192	3.69
b. Procurement			
(1) Cost (BY80\$)	359.5	347.3	
(2) Quantity	3156	3156	
(3) Unit Cost	0.114	0.110	3.51

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	338.3	933.8	0.0	1272.1
Previous Changes:				
Economic	-6.2	+6.4	-	+0.2
Quantity	-	-214.6	-	-214.6
Schedule	-	+21.5	-	+21.5
Engineering	-	+14.3	-	+14.3
Estimating	+83.0	-88.2	-	-5.2
Other	-	-	-	-
Support	-	+0.8	-	+0.8
Subtotal	+76.8	-259.8	-	-183.0
Current Changes:				
Economic	-6.4	-18.6	-	-25.0
Quantity	-	-5.3	-	-5.3
Schedule	-	-3.6	-	-3.6
Engineering	-	-	-	-
Estimating	23.7	-2.6	-	+21.1
Other	-	-	-	-
Support	-	-55.1	-	-55.1
Subtotal	+17.3	-85.2	-	-67.9
Total Changes	+94.1	-345.0	-	-250.9
Current Estimate	432.4	588.8	-	1021.2

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1980 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	215.2	545.5	0.0	760.7
Previous Changes:				
Quantity	-	-105.7	-	-105.7
Schedule	-	-0.2	-	-0.2
Engineering	-	+8.2	-	+8.2
Estimating	+42.0	-57.3	-	-15.3
Other	-	-	-	-
Support	-	-2.8	-	-2.8
Subtotal	+42.0	-157.8	-	-115.8
Current Changes:				
Quantity	-	-2.3	-	-2.3
Schedule	-	-3.4	-	-3.4
Engineering	-	-	-	-
Estimating	12.2	1.1	-	+13.3
Other	-	-	-	-
Support	-	-23.6	-	-23.6
Subtotal	+12.2	-28.2	-	-16.0
Total Changes	+54.2	-186.0	-	-131.8
Current Estimate	269.4	359.5	-	628.9

b. Previous Change Explanations --

RDT&E

Economic: Revised escalation indices. Adjustment for Negative Program Change.

Estimating: Adjustment for current and prior inflation. Revised estimate associated with reprogramming of R&D funding FY90-FY00. Revised estimate associated with reprogramming of R&D funding FY93-FY00. Revised estimate based on reduced funding in FY94-FY00. A 1+ year delay (from FY94 to FY95) in CHS-2 contract award to allow completion of MCS Block III and delayed the releasing of the MCS Block IV contract due to funding shortfalls stretched the R&D effort.

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13b. Cost Variance Analysis (Cont'd):

Procurement

Economic: Revised escalation indices. Economic adjustment for negative program change.

Quantity: Reduction in Active Army Force Structure from 6365 to 5667. A correction to the Dec 91 SAR to recategorize from a Schedule change to a Quantity change. Quantity variance in Dec 94 SAR, resulted from a decrease of 2414 units from 5667 to 3253, due to change in program requirements.

Schedule: One year production delay due to a slip of the IOT&E test from May 92 to Mar 93. Change in procurement buy schedule, program slipped two years. A correction to the Dec 91 SAR to recategorize from a Schedule change to a Quantity change. A change in annual procurement buy profile from FY-95 to FY-96. The Dec 94 SAR reported continued delays in the CHS-2 contract, in which PM OPTADS was directed to replan the program to reflect a LUT in FY95, (R&D) and an LRIP in FY96 (proc), which caused an increase in schedule.

Engineering: Engineering upgrades of NDI equipment to a 375 processor and 8MB RAM increase.

Estimating: A revised estimate of hardware costs based on actual contract data. Adjustment for Current & Prior Inflation. Reconcile differences between flyaway and support due to changes in cost estimating assumptions and techniques. The Dec 94 SAR's revised estimate accounted for a restructured program based on anticipated CHS-2 costs which were higher than CHS-1.

Support: Transition of OMA support dollars to OPA support dollars. Adjustment for Current & Prior Inflation. Initial Spares increased due to a change in methodology (% applied) for the LCU's and an increase in spares due to the extension of the program by two years. Support/Fielding costs have decreased due to realignment of a support element to flyaway and changes in support/fielding requirements. A correction to the Dec 91 SAR to recategorize from a Support change to an Estimating change. A decrease in spare requirements pending approval of a new restructured program. Increase in support/fielding costs due to changes in requirements associated with a 3 year stretch in the program. The Dec 94 SAR Initial Spares increased due to a change in requirements. Support/Fielding in the Dec 94 SAR, decreased due

MCS, December 31, 1995

13b. Cost Variance Analysis (Cont'd):

to changes in methodology based on anticipated CHS-2 costs and a decrease of 2414 computers.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-6.4
Adjustment for Current and Prior Inflation. (Estimating)	+0.6	+1.2
Revised estimate to add additional software to support Task Force XXI and IOT&E. (Estimating)	+6.6	+13.1
Revised estimate for planned testing by OPTEC. (Estimating)	+5.0	+9.4
	<hr/>	<hr/>
RDT&E Subtotal	+12.2	+17.3
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-20.5
Economic adjustment for negative program change. (Economic)	N/A	+1.9
Adjustment for Current and Prior Inflation. (Estimating)	+0.4	+0.5
Quantity decrease of 97 computers from 3253 to 3156 due to a reduction in the Army force structure from a 12 division to a 10 division Army. (Quantity)	-2.3	-5.3
A decrease in support/fielding costs, resulting from a change in MCS requirements and methodology, caused the procurement of CHS-2 hardware to accelerate. (Schedule)	-3.4	-3.6
A revised estimate based on range quantity discounts from the CHS-2 contract. (Estimating)	+0.7	-3.1
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Initial Spares increased due to a change in requirements. (Support)	+0.8	+1.5

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate for reduced fielding support requirements for Total Pack Fielding, Interim Contractor Support and New Equipment Training Team and a decrease in the Army Force. (Support)	-24.6	-56.8
Procurement Subtotal	-28.2	-85.2

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
Econ	Qty	Sch	Eng	Est	Other	Spt	Total		
0.200	-0.008	0.133	0.006	0.005	0.005	--	-0.017	0.124	0.324

15. Contract Information: None.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 73.9% (17 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 72.2% (\$737.2 / \$1021.2)

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16b. Program Funding Summary (Cont'd):

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY80-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2002)	<u>Total</u>
RDT&E	285.0	35.9	29.1	82.4	432.4
Procurement	398.0	18.3	19.1	153.4	588.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	683.0	54.2	48.2	235.8	1021.2

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1980				8.5	9.0	9.0	9.0	10.6
1981				13.2	15.2	15.2	15.2	10.6
1982				13.6	16.6	16.6	16.6	7.6
1983				15.7	19.9	19.9	19.9	4.0
1984				12.6	16.5	16.5	16.5	3.8
1985				23.5	31.8	31.8	31.8	3.4
1986				8.5	11.9	11.9	11.9	2.8
1987				8.8	12.6	12.6	12.6	2.7
1988				9.4	14.0	14.0	14.0	3.0

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1989				7.7	11.9	11.9	11.9	4.2
1990				7.0	11.3	11.3	11.3	4.1
1991				10.6	17.8	17.8	17.8	4.3
1992				21.5	36.8	36.8	36.8	3.0
1993				15.3	26.8	26.8	26.8	2.4
1994				8.9	15.9	15.9	15.9	2.0
1995				9.3	17.0	16.7	16.7	1.9
1996				19.3	35.9	15.0	15.0	2.0
1997				15.3	29.1			2.2
1998				11.8	22.9			2.2
1999				8.7	17.3			2.3
2000				7.5	15.3			2.2
2001								2.2
2002				12.7	26.9			2.2
Subtot				269.4	432.4	299.7	299.7	

Expenditures and obligations reflect program office records as of March 6, 1996.

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2035 Other Procurement, Army

1983	34	2.0	18.0	21.0	27.7	27.7	27.7	4.0
1984	31	0.2	20.7	21.8	29.5	29.5	29.5	3.8
1985	38	0.2	19.9	21.7	30.4	30.4	30.4	3.4
1986	103	0.4	38.3	45.9	66.0	66.0	66.0	2.8
1987	705	0.1	39.7	47.5	70.6	70.6	70.6	2.7
1988	887	1.1	53.5	73.7	114.3	114.3	114.3	3.0
1989			5.9	5.9	9.6	9.6	9.6	4.2
1990			11.4	11.4	19.1	19.1	19.0	4.1
1991			3.5	3.5	6.0	6.0	5.4	4.3
1992			2.2	4.6	8.0	8.0	7.8	3.0
1993			9.3	9.4	16.8	16.8	15.9	2.4
1994								2.0
1995								1.9
1996	123		7.9	9.7	18.3	11.2		2.0
1997	155		7.1	9.8	19.1			2.2
1998	141		6.3	8.2	16.2			2.2
1999	165		7.3	9.3	18.9			2.3
2000	383		15.6	20.4	42.2			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY80 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2001	391		21.1	26.4	55.9			2.2
2002				9.3	20.2			2.2
Subtot	3156	4.0	287.7	359.5	588.8	409.2	396.2	
Grand Total	3156	4.0	287.7	628.9	1021.2	708.9	695.9	

The recurring costs from FY89 through FY93 were for hardware component upgrades and for software development through FY90 and no end items were purchased. Until the MCS initial spare line is corrected, initial spares are shown in FY02 to support fielded equipment from FY96 through FY01. Expenditures and obligations reflect program office records as of March 6, 1996.

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	10/10
Procurement	1798/1798

b. Approved Design-to-Cost Objective -- N/A.

The MCS program will utilize common hardware equipment. There is no Design-to-Cost Objective for this program.

18. Operating and Support Costs:

MCS, December 31, 1995

18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

Major assumptions and ground rules used to estimate operating and support costs are as follows: There is no antecedent system for MCS. All MCS operating costs are estimated based upon peacetime usage rates. Costs are based on an operating life of 20 years. In each year that MCS workstation is fielded, it will be fielded with the latest available version of MCS software. In years in which a new version becomes available any equipment already in the field will require an upgrade to its software, as well as a retraining from the NET team. This will be the case until all the Army units are equipped with Version 12.3 software. No Military Occupational Specialty (MOS) nor Skill Identifiers have been authorized for MCS. Therefore, MCS has no dedicated military operation crew. CHS-2 equipment is contractor maintained. The CHS-2 contract with GTE includes a charge for contractor maintenance of the equipment in the component unit cost. Spares and repair parts are procured in each year that equipment is in the field. For the first year that equipment is in the field it will utilize Initial Spares and Repair Parts, and Replenishment Spares and Repair Parts thereafter. The sustaining investment consists primarily of replenishment repair parts (Vehicles, Standard Integrated Command Post System (SICPS), generators) and replenishment spares for all equipment). There is depot maintenance labor for the end item vehicles for the CHS-2 equipment. POL is required for all the vehicles and generators to support the CHS-2 equipment.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1980 Constant (Base-Year) Dollars in Thousands)

Cost Element	MCS Avg Annual Cost Per Equipment	Avg Annual Cost Per Equipment (Antecedent)
REPLENISHMENT SPARES	0.2	N/A
REPLENISHMENT REPAIR PTS	2.6	N/A
POL	0.4	N/A
DEPOT MAINTENANCE	2.9	N/A
TRANSPORTATION	0.1	N/A
PDSS	1.0	N/A
SOFTWARE MODIFICATIONS	0.3	N/A
SYSTEM PROJ MGT	0.1	N/A
CONSUMABLES	0.4	N/A
SYSTEM TEST & EVALUATION	2.1	N/A
OTHER	0.6	N/A
Total	10.7	N/A

SOURCE OF DATA: Validated Program Office Estimate (POE) Dec 1995.
 Annual O&S costs per equipment are input in thousands of dollars:
 Replenishment Spares = \$1,986.00, Replenishment Repair Parts =
 \$2,568.00, POL = \$374.00, Depot Maintenance = \$2,873.00,
 Transportation = \$65.00, Software Support (PDSS) = \$1,026.00, System
 Project Management (SPM) = \$89.00, Consumables = \$387.00, Software
 Modifications = \$319.00, System Test & Evaluation = \$2,130.00. Other
 O&S includes Common ATCCS Logistics Documentation = \$630.00.

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
DEPOT MAINT	2.5	---	---	---	2.5
INDUSTRIAL FUNDS	---	---	---	---	---
Total	2.5	---	---	---	2.5

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SELECTED ACQUISITION REPORT (RCE:DD-COMP(O&A)823)

PROGRAM: SADARM

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Sense and Destroy Armor (SADARM)

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
OFFICE OF THE PROJECT MANAGER FOR COL JAMES E. UNTERSEHER
SENSE & DESTROY ARMOR (SADARM) Assigned: September 1, 1995
ATTN: SPAE-FAS-SD AV 880-2573 COMM 201-724-2573
PICATINNY ARSEN, NJ 07806-5000

4. (U) Program Elements/Procurement Line Items:

RDTEE:
PE 64802 Project D369
PE 64814 Project D644, D2ST
PROCUREMENT:
APPN 2034 ICN E66300 (Army)

CLEARED AS AMENDED
FOR OPEN SOURCE

MAR 29 1996 4

DEPT. OF DEFENSE
OFFICE OF THE SECRETARY
ATTENTION: ASST. SEC. FOR ACQUISITION

~~Classified by: [redacted] on [redacted] 16 April 1992~~
~~Derived from: Regrade unclassified when reported from [redacted]~~
~~[redacted]~~

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96-C-0458

SADARM, December 31, 1995

5. (U) Related Programs: None.

6. (U) Mission and Description:

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) Program Highlights:

a. (U) Significant Historical Developments --
Aerojet and Honeywell (now Alliant Techsystems) were selected in September 1986 to complete competitive Full Scale Development (FSD) of the submunitions and carriers for the 155mm and 8 inch projectiles and submunitions for the MLRS Rocket. In December 1986, LTV was selected as the MLRS Rocket integration contractor. In July 1989, both FSD submunition/projectile contractors scored hits with live 8 inch hardware in the Congressional Demonstration Test. However, the requirement for the 8 inch SADARM had been previously eliminated when the Army developed plans to retire the 8 inch howitzer from the inventory.

In 1991, due to changes in the Eastern European threat, the Army Acquisition Objectives (AAO) for the MLRS SADARM and the 155mm SADARM were reduced by 60% and 30% respectively, causing a Program Acquisition Unit Cost (PAUC) breach in excess of 25%. On May 3, 1991, the Under Secretary of Defense for Acquisition (USD(A)) certified the program to Congress. In May 1991, a new acquisition strategy for the completion of Engineering & Manufacturing Development (EMD) (formerly FSD) was implemented due to budget reductions. In March 1991, after an extensive design select effort in which both competing EMD contractors scored direct hits with 155mm SADARM projectiles, the Aerojet design was chosen for EMD completion. Aerojet and Alliant teamed together in a Prime/Sub arrangement.

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7a. (U) Program Highlights (Cont'd):

Due to testing issues, the planned FY 93 155mm Procurement Start was delayed. Due to affordability, the MLRS Production Start was delayed by one year to FY 95, and quantities were reduced during the FY 95 through FY 99 timeframe. In addition, the basic MLRS rocket production was not funded during this timeframe. This caused an increase to the total procurement cost of the MLRS SADARM in excess of the 5% Acquisition Program Baseline (APB) threshold.

In July 1993, although there were 9 direct hits from 21 155mm SADARM projectiles fired, the performance phase of Technical Testing was halted before completion due to submunition reliability being less than anticipated. An independent Failure Analysis team was chartered by the Program Executive Officer (PEO) to investigate the reliability problem. The team concluded that all problems were solvable, potential fixes were identified, and that additional testing was required to prove out the fixes and provide confidence to meet reliability objectives. On 2 September 1993, the Army staff approved a program restructure to provide corrective actions, increase reliability, and resume technical and operational testing. The FY 94 Congressional Language for the Defense Budget significantly impacted the SADARM program. The DoD Appropriations Language for 1994 directed that the SADARM program should be terminated in FY 94, and provided \$28.5M for termination. Subsequently, the National Defense Authorization Act for FY 94 provided \$28.5M to maintain the SADARM program in a "standby status" while the Army conducted additional analyses of the program, and provide a report to the Congressional Defense Committees on the results by May 1994. On 2 December 1993, the DA Office of the General Counsel determined that since Congress had not legislatively directed the Army to terminate the SADARM program, the Army could expend \$28.5M in FY 94 RDT&E to carry out committee-recommended analyses and re-evaluations of the SADARM program. In the meantime, significant progress was made in identifying appropriate fixes to improve reliability and eliminate duds. To accommodate the FY 94 funding constraints, significant program reductions were made from the Army-approved plan. All work on the MLRS SADARM was discontinued. Only those corrective actions that could be accomplished within the appropriated amount were undertaken on a priority basis, with system testing of the corrective actions planned prior to the May 1994 report date requested by Congress.

In April 1994, thirteen 155mm SADARM projectiles were fired at the ORD-required range of fifteen kilometers to determine if the corrective actions implemented were successful. There were eleven direct hits and no duds. The performance exceeded the ORD requirements for entering Low Rate Production (LRP) by 25%. The test

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7a. (U) Program Highlights (Cont'd):

results were provided to Congress in May 1994. In October 1994, Congress approved an emergency reprogramming of \$13.6M to restart the EMD effort to implement and test the remaining corrective actions for problems which occurred only at the longest ranges. The FY 95 Appropriations Act provided sufficient funds for EMD in FY 95 as well as for a FY 95 procurement start for the 155mm SADARM. Fuze, Safe, & ARM (FSA) testing in November 1994 confirmed that the fixes to that subsystem were successful with 52 for 52 FSAs functioning correctly at the temperature and range extremes. Corrective actions for the submunition to submunition collisions were identified and a number of tests were conducted. No further collisions have been observed. All corrective actions will be fully implemented and tested prior to deliveries of the FY 95 quantities.

The FY 96 President's Budget did not provide funds for the MLRS SADARM. It should be noted that demonstration of SADARM integration into the MLRS Rocket was virtually complete when it was terminated. Reporting on the MLRS SADARM Rocket has been discontinued. The 155mm projectile quantity was increased from 39018 to 73612 in accordance with the Cost and Operational Effectiveness Analysis (COEA) for a 155mm only program. Increasing the quantity of 155mm SADARMS resulted in a Total Procurement Cost breach. The loss of the MLRS SADARM coproduction resulted in a higher unit cost for the 155mm SADARM.

The Defense Acquisition Board (DAB) approved 155mm SADARM LRP on 30 March 1995. The Acquisition Decision Memorandum (ADM) of 4 April 1995 also approved a SADARM Product Improvement (PI) program.

b. (U) Significant Developments Since Last Report --

The Army reprogrammed \$5M into FY 95 Procurement reinstating the funding and quantities to their level prior to the cut imposed by non-prejudicial FY 95 Joint Appropriations Committee Language.

The Low Rate Production contract was awarded to Aerojet in April 1995.

The recognized problem of submunition to submunition collisions, which occurred during high zone firings after ejection from the projectile, was solved before the March 1995 Defense Acquisition Board (DAB), but the fix had not been fully proven out. From April 1995 to October 1995, three test series were conducted. A total of sixteen projectiles were fired at the highest zone (zone 8S); all rounds spun up and reached full range with no evidence of collisions.

Margin testing was conducted in November 1995. Six projectiles, fired at conditions in excess of the maximum gun launch environment,

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7b. (U) Program Highlights (Cont'd):

demonstrated that the submunitions will function reliably at high zones.

The SADARM Product Improvement (PI) program was funded in accordance with the Acquisition Decision Memorandum (ADM) dated 4 April 1995. It is expected to increase effectiveness and decrease unit cost. This has caused an increase to the total RDT&E costs in excess of 15% causing an Acquisition Program Baseline (APB) breach when comparing it to only the costs allocated to the 155mm Projectile portion of the SADARM program. The effect on Total Procurement Costs will be reflected in the APB submitted for milestone III when better data will be available to assess both cost and effectiveness.

The SADARM system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There is a RDT&E breach in excess of 15% to the APB dated 5 April 1995. A Program Deviation Report and APB change request were submitted on 6 March 1996.

There are no Nunn-McCurdy Unit Cost breaches.

9. (U) Schedule:

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Generic SADARM Submunition Development Approved by Army Materiel Cmd	NOV 84	NOV 84	NOV 84
Congressional Direction for FSD/Prod	DEC 85	DEC 85	DEC 85
DA Approval SADARM (155mm & MLRS) ROC	MAR 86	MAR 86	MAR 86
DA In-Process Review for Submunition FSD	SEP 86	SEP 86	SEP 86
Competitive Submunition FSD Contract Award	SEP 86	SEP 86	SEP 86
Milestone II (ASARC)	NOV 87	NOV 87	NOV 87
Milestone II (DAB)	MAR 88	MAR 88	MAR 88
Congressional Demonstration Start	JAN 89	JAN 89	JAN 89
Complete	APR 89	APR 89	JUL 89
Army Decision: keep 2 submun sizes 155mm SADARM Tech Tests	N/A	NOV 90	NOV 90

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9a. (U) Schedule (Cont'd):

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Start	MAY 90	AUG 91	JUL 91
Complete	JUL 91	FEB 96	APR 96 (Ch-1)
Milestone IIIA-155mm SADARM	N/A	N/A	MAR 95
155mm SADARM IOT&E			
Start	JUL 91	JUN 98	JUN 98
Complete	DEC 91	JUL 98	JUL 98
Submunition Design Select	JAN 92	N/A	N/A
Type Classification	JAN 92	N/A	N/A
Milestone III (ASARC)	JAN 92	N/A	N/A
LRP Decision	N/A	MAR 95	MAR 95
LRP Contract Award	N/A	APR 95	APR 95
LRP First Delivery	N/A	OCT 97	OCT 96
Milestone III DAB	APR 92	DEC 98	DEC 98
155mm SADARM Full Scale Production	MAY 92	JAN 99	JAN 99
Award			
Service Support Depot	N/A	N/A	N/A
IOC/First Unit Equipped-155mm SADARM	JUL 93	JUL 99	JUL 99
Organic Support Capability	N/A	JUL 99	JUL 99

b. (U) Previous Change Explanations --

The Congressional Demonstration End was rescheduled from April 1989 to July 1989 because of a longer than expected test, fix, and retest process. The remaining development program was restructured to reduce excessive test schedule risk. DA Approval of a 48-month Acquisition Plan was changed from April 1986 to N/A. It was deleted from the 6 September 1991 APB. The 155mm Tech Test Start changed from August 1991 to July 1991 to reflect the actual date of accomplishment.

The following milestones were changed as a result of extending the EMD program by one year. The Under Secretary of Defense for Acquisition (USD(A)) approved the changes in his memorandum of December 1992. Tech Test Complete was changed from NOV 92 to JUL 93. Milestone IIIa was changed from MAR 93 to SEP 93. IOT&E Start was changed from JUL 93 to OCT 93. LRIP Contract Award was changed from APR 93 to NOV 93. IOT&E Complete was changed from OCT 93 to JUL 94. Milestone III DAB - 155mm & MLRS was changed from JUN 94 to JUN 95. Full Scale Production Award was changed from JUN 94 to OCT 95. IOC/First Unit Equipped was changed from JUL 94 to SEP 95.

The following milestones were changed in 1993 because of the submunition reliability problem. Tech Test Complete was changed

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9b. (U) Schedule (Cont'd):

from JUL 93 to AUG 95. Milestone IIIa was changed from SEP 93 to DEC 95. LRIP Contract Award was changed from NOV 93 to FEB 96. IOT&E Start was changed from OCT 93 to JUL 96. IOT&E Complete was changed from JUL 94 to DEC 96. Milestone III DAB - 155mm & MLRS was changed from JUN 95 to SEP 97. Full Scale Production Award was changed from OCT 95 to DEC 97. IOC/First Unit Equipped was changed from SEP 95 to MAR 98.

As a result of restarting the EMD program with a FY 95 production start and four year Low Rate Production (LRP) acquisition strategy, the following milestones were changed: 155mm SADARM Tech Tests, Complete was changed from AUG 95 to FEB 96; Milestone IIIa-155mm SADARM was changed from DEC 95 to MAR 95; 155mm LRIP Contract Award was changed from FEB 96 to APR 95; 155mm SADARM IOT&E Start was changed from JUL 96 to JUN 98; 155mm SADARM IOT&E Complete was changed from DEC 96 to JUL 98; Milestone III (DAB) was changed from SEP 97 to DEC 98; 155mm SADARM Full Rate Production Award was changed from DEC 97 to JAN 99; and IOC/First Unit Equipped-155mm SADARM was changed from MAR 98 to JUL 99. The following milestones were added: LRP First Delivery, OCT 96; and Organic Support Capability, JUL 99.

c. (U) Current Change Explanations --

(Ch-1) The current estimate for Tech Test Complete was changed from Feb 96 to Apr 96 due to longer than anticipated time to finish corrective actions.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline, dated 24 July 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 04, 1995.

10. (U) Performance Characteristics:

a. (U) Performance --	Approved Program	Demon- strated	Current
	DE	Perf	Estimate
	Objective/Threshold		



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10a. (U) Performance Characteristics (Cont'd):

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
155mm Max Range (km) (M109A1/A2/A3/A4 series howitzers)	N/A	17.9	/ 17.9	17.9	17.9
155mm Max Range (km) (M198 series)	22.5	N/A	/ N/A	22.5	22.5
155mm Max Range (km) (M109 A3/E2 HIP) (M109A6)	22.5	N/A	/ N/A	22.5	22.5
155mm Max Range (km) (M198 and M109A5/A6 series howitzers)	N/A	22.5	/ 22.5	22.5	22.5

(b)(1)

Storage Life (all SADARM munitions) (yrs)	10	20	/ 10	10	10
155mm Carrier Reliability	0.90	N/A	/ N/A	.98	.98
Submunition Reliability (155mm)	0.80	.9	/ .8	.61	.80
Submunition Self Destruct at less than 10 meters	N/A	.95	/ .90	TBD *	.95

b. (U) Previous Change Explanations --

(b)(1)

(U) The estimated 155mm Carrier Reliability increased from .90 to .98 as a result of testing.

c. (U) Current Change Explanations --

(Ch-1) 155mm Effectiveness has been replaced by 155mm Ek in the APB dated April 04, 1995.

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10d. (U) Performance Characteristics (Cont'd):

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 04, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

a. (U) Cost --	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Development (RDT&E)	237.7	316.6	365.7
Procurement	248.0	1486.2	1493.2
Recurring Flyaway	(248.0)		(0.0)
Nonrecurring Flyaway	(0.0)		(0.0)
Non-recurring flyaway			(28.3)
Recurring flyaway			(1449.4)
Total Flyaway	(248.0)		(1477.7)
Pallets	(0.0)		(0.0)
Pallets			(2.6)
Total Other Wpn Sys	(0.0)		(2.6)
Peculiar Support	(0.0)		(12.9)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 89 Base-Year \$	485.7	1802.8	1858.9
 Escalation	 49.4	 1093.9	 844.7
Development (RDT&E)	(8.2)	(38.8)	(50.5)
Procurement	(41.2)	(1055.1)	(794.2)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	535.1	2896.7	2703.6

In addition to the above, \$589.8M (then year) was spent on the MLRS SADARM Rocket prior to termination.

b. (U) Quantity --

Development (RDT&E)	132	166	166
Procurement	<u>10156</u>	<u>73612</u>	<u>73612</u>
Total	10288	73778	73778

Note: Excludes 772 RDTE prototypes from the SAR Baseline and 772 from the Current Estimate that are not considered fully configured.

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11b. (U) Total Program Cost and Quantity (Cont'd):

The Low Rate Initial Production quantity planned at the time of the 30 March 1995 DAB was 1287.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline, dated July 24, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 04, 1995.

12. (U) Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (APR 95 APB)	<u>Percent</u> <u>Change</u>
a. (U) Total Program			
(1) Cost (BY89\$)	1858.9	1802.8	
(2) Quantity	73778	73778	
(3) Unit Cost	0.025	0.024	3.11
b. (U) Procurement			
(1) Cost (BY89\$)	1493.2	1486.2	
(2) Quantity	73612	73612	
(3) Unit Cost	0.020	0.020	0.47

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13. (U) Cost Variance Analysis:

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	245.9	289.2	0.0	535.1
Previous Changes:				
Economic	+1.5	+78.1	-	+79.6
Quantity	-	+1018.2	-	+1018.2
Schedule	+7.9	+604.6	-	+612.5
Engineering	-	-	-	-
Estimating	+99.5	+509.6	-	+609.1
Other	-	-	-	-
Support	-	+25.3	-	+25.3
Subtotal	+108.9	+2235.8	-	+2344.7
Current Changes:				
Economic	-2.0	-250.9	-	-252.9
Quantity	-	1.1	-	+1.1
Schedule	-	-1.1	-	-1.1
Engineering	62.8	-	-	+62.8
Estimating	0.6	13.6	-	+14.2
Other	-	-	-	-
Support	-	-0.3	-	-0.3
Subtotal	+61.4	-237.6	-	-176.2
Total Changes	+170.3	+1998.2	-	+2168.5
Current Estimate	416.2	2287.4	-	2703.6

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13a. (U) Cost Variance Analysis (Cont'd):

a. (U) Summary (FY 1989 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	237.7	248.0	0.0	485.7
Previous Changes:				
Quantity	-	+683.1	-	+683.1
Schedule	+6.4	+216.3	-	+222.7
Engineering	-	-	-	-
Estimating	+73.3	+317.7	-	+391.0
Other	-	-	-	-
Support	-	+15.5	-	+15.5
Subtotal	+79.7	+1232.6	-	+1312.3
Current Changes:				
Quantity	-	0.6	-	+0.6
Schedule	-	0.2	-	+0.2
Engineering	47.8	-	-	+47.8
Estimating	0.5	11.8	-	+12.3
Other	-	-	-	-
Support	-	-	-	-
Subtotal	+48.3	+12.6	-	+60.9
Total Changes	+128.0	+1245.2	-	+1373.2
Current Estimate	365.7	1493.2	-	1858.9

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices.

Schedule: Schedule adjusted to reduce test schedule risk and allow additional time for test-fix-test of complete tactical rounds.

Estimating: Program restructured to include two submunition sizes and changed acquisition strategy to a Joint Venture. Reallocated common submunition development costs between 155mm and MLRS due to production quantity changes. FY93 Procurement funding was converted to RDT&E to allow additional time for test-analyze-fix-test of complete tactical rounds. Additional FY94 funding was provided to

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13b. (U) Cost Variance Analysis (Cont'd):

reinstate the E&MD program as a 155mm SADARM only program.

Procurement

- Economic: Revised escalation indices.
- Quantity: Addition of FY95-FY02 quantities (+53,230)
Reduction in quantities by 24,368 to 39,018.
Additional quantity of 34,514 units due to termination of MLRS SADARM Rocket.
- Schedule: Schedule adjustment related to ammended FY90/91 President's Budget. Delay production start due to RDT&E schedule change to allow additional time for test-fix-test of complete tactical rounds, and stretch to accomodate funding limitations. Procurement schedule extended to 18 years to accomodate additional quantity and budgetary limitations.
- Estimating: Added costs to fund Process & Reliability Enhancement (PRE), and reduced submunition unit costs due to PRE savings. Revised estimated costs due to Prime/Sub Acquisition Strategy and results of fixes to EMD problems. Increased unit costs due to loss of MLRS SADARM Rocket coproduction.
- Support: Increased data costs due to increased quantity. Additional pallet costs due to increased quantity.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	-2.0
Adjustment for Current and Prior Inflation. (Estimating)	+1.4	+1.7
Revised funding guidance for Operational Test (Estimating)	+0.1	+0.2
Adjusted program to funding constraints. (Estimating)	-1.0	-1.3
Addition of Product Improvement Program (Engineering)	+47.8	+62.8
	<hr/>	<hr/>
RDT&E Subtotal	+48.3	+61.4
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-251.2

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13c. (U) Cost Variance Analysis (Cont'd):

(Dollars in Millions)		
	<u>Base-Year</u>	<u>Then-Year</u>
Economic adjustment for negative program change. (Economic)	N/A	+0.3
Adjustment for Current and Prior inflation. (Estimating)	+1.0	+1.2
Total variance associated with increase of 80 units from 73,532 to 73,612.	+1.0	+1.8
Quantity increase of 80 units. (Quantity)	+0.6	+1.1
Allocation to schedule variance associated with quantity increase. (Schedule)	+0.2	+0.4
Allocation to estimating variance associated with quantity increase. (Estimating)	+0.2	+0.3
Acceleration of annual procurement buy profile. (Schedule)	--	-1.5
Adjustment for loss of MLRS SADARM coproduction. (Estimating)	+10.6	+12.1
Revised estimate for reduced data and pallets. (Support)	--	-0.3
 Procurement Subtotal	 <u>+12.6</u>	 <u>-237.6</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.052	-0.002	-0.030	0.008	0.001	0.008	--	--	-0.015	0.037

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E -- (U) SADARM-EMD:	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
AEROJET ELECTROSYSTEMS CO, AZUSA, CA DAAA21-86-C-0309, CPIF Award: September 1, 1986 Definitized: September 1, 1986	\$87.2	N/A	0

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$435.9	N/A	0	\$438.4	\$436.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$-78.2	\$-14.2
Cumulative Variances To Date (12/28/95)			\$0.9	\$-2.3
Net Change			\$79.1	\$11.9

Explanation of Change:

The contract was rebaselined in April 1995.

All work on the MLRS SADARM has been discontinued. The remaining work involves repeating 155mm system testing to verify that all corrective actions were successful.

This contract applies to the 155mm SADARM and the MLRS SADARM EMD. It includes the sunk costs for the MLRS SADARM. All work on the MLRS SADARM has been discontinued in FY 94.

b. (U) Procurement --

(U) <u>SADARM-LRP:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
AEROJET ELECTROSYSTEMS CO, AZUSA, CA			
DAAE30-95-C-0080, CPIF	\$29.0	N/A	110
Award: April 20, 1995			
Definitized: August 11, 1995			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$29.0	N/A	110	\$28.9	\$28.9
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			N/A	N/A
Cumulative Variances To Date (12/28/95)			\$0.4	\$0.0
Net Change			\$0.4	\$0.0

Explanation of Change: None.

This is the first time this contract has been reported in the SAR.

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16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

- (1) Percent Program Completed: 39.3% (11 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 15.5% (\$418.4 / \$2703.6)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY86-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2013)	<u>Total</u>
RDT&E	331.3	16.2	10.1	58.6	416.2
Procurement	29.8	41.1	60.3	2156.2	2287.4
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	361.1	57.3	70.4	2214.8	2703.6

c. (U) Annual Summary --

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1986				2.7	2.5	2.5	2.5	2.8
1987				14.9	14.2	14.2	14.2	2.7
1988				24.2	24.0	24.0	24.0	3.0
1989				37.8	39.0	39.0	38.9	4.2
1990				48.3	51.7	51.7	51.5	4.1
1991				29.0	32.2	32.2	32.2	4.3

SADARM, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY89 Dollars			Program	Obligated	Expended	
		Nonrec	Rec					

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1992				55.4	63.0	63.0	62.9	3.0
1993				19.4	22.6	22.6	22.0	2.4
1994				35.1	41.6	41.6	41.6	2.0
1995				33.4	40.5	40.4	34.9	1.9
1996				13.1	16.2	8.1	0.6	2.0
1997				8.0	10.1			2.2
1998				17.5	22.6			2.2
1999				15.9	21.0			2.3
2000				9.6	13.0			2.2
2001				1.4	2.0			2.2
2002								
Subtot	166			365.7	416.2	339.3	325.3	

Expenditures and obligations reflect program office estimates as of 31 December, 1995.

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
1986	34.3	31.7

SADARM, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

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
<u>TOTAL</u>	<u>558.4</u>	<u>589.8</u>

Appropriation: 2034 Procurement of Ammunition, Army

1995	110	6.6	18.4	24.3	29.8	29.8	1.6	1.9
1996	171	7.8	28.2	32.8	41.1	0.4	0.1	2.0
1997	322	10.8	32.8	47.1	60.3			2.2
1998	668	3.1	47.4	53.1	69.5			2.2
1999	1117		57.7	58.4	78.1			2.3
2000	1315		61.4	62.1	84.9			2.2
2001	1985		59.6	60.3	84.3			2.2
2002	3405		84.3	85.1	121.5			2.2
2003	4600		99.3	100.1	146.1			2.2
2004	6800		127.0	127.9	190.8			2.2
2005	6800		119.1	120.0	183.0			2.2
2006	6800		113.6	114.5	178.4			2.2
2007	6800		109.4	110.3	175.6			2.2
2008	6800		106.0	106.9	174.0			2.2
2009	6800		103.3	104.2	173.3			2.2
2010	6800		100.9	101.8	173.1			2.2
2011	6800		98.9	99.8	173.4			2.2

SADARM, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY89 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2034 Procurement of Ammunition, Army (Cont'd)

2012	5519		82.1	83.0	147.4			2.2
2013				1.5	2.8			2.2
Subtot	73612	28.3	1449.4	1493.2	2287.4	30.2	1.7	
Grand Total	73778	28.3	1449.4	1858.9	2703.6	369.5	327.0	

Expenditures and obligations reflect program office records as of 31 December, 1995.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

RDT&E	<u>Plan/Actual</u>
Procurement	707/707
	0/0

b. (U) Approved Design-to-Cost Objective -- N/A.

There is no current Design - To - Cost goal.

18. (U) Operating and Support Costs:

a. (U) Assumptions and Ground Rules --

The 155mm SADARM munitions are considered "wooden rounds" and have no operational costs. The only O&S costs are for depot storage and stockpile testing. There is no antecedent.

b. (U) Costs -- None.

Average annual cost is \$35 per 155mm SADARM per year for depot storage.

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SADARM, December 31, 1995

18c. (U) Operating and Support Costs (Cont'd):

c. (U) Contractor Support Costs -- None.

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A-13 FMTV

03

*** UNCLASSIFIED ***

SELECTED ACQUISITION REPORT (RCS:DD-COMP(OLA)823)

PROGRAM: FMTV

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):
Family of Medium Tactical Vehicles (FMTV)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army, Program Executive Office, Mr. Dennis Mazurek (Act)
 Tactical Wheeled Vehicles Assigned: November 1, 1995
 ATTN: SFAE-TWV-FMTV AV 786-8665 COMM (313) 574-8665
 Warren, MI 48397-5000

4. Program Elements/Procurement Line Items:

RDT&E:

PE 64604 Project DH07

PROCUREMENT:

APPN 2035 ICN D15500 (Army)
 APPN 2035 ICN DV0310 (Army)
 APPN 2035 ICN DV0320 (Army)
 APPN 2035 ICN DY0010 (Army)

MAR 29 1996

5. Related Programs: None.

6. Mission and Description:

The Family of Medium Tactical Vehicles (FMTV) is a complete series of trucks based on a common chassis and 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

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96-C-0449

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FMTV, December 31, 1995

6. Mission and Description (Cont'd):

Vehicle (MTV) has a 5 ton capacity and consists of cargo, tractor, van, wrecker, tanker and dump truck models. Subvariants provide Low Velocity Air Drop (LVAD) capability for contingency and rapid deployment operations. Commonality between variants significantly reduces operational and maintenance costs. The program's Joint Service Operational Requirement "JSOR" document also requires complimentary 2 1/2 ton and 5 ton tactical trailers incorporating off-road performance capability and cargo bed size, common with the LMTV and MTV cargo trucks. 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 FMTV is required to fill the 2-1/2 ton truck (LMTV) and 5 ton truck (MTV) requirements, reduce significant operating and support costs, resolve operational deficiencies and operate through the theater as multi-purpose transportation vehicles used by 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. The vehicles operate in all climatic conditions.

7. Program Highlights:

a. Significant Historical Developments --

The Family of Medium Tactical Vehicles (FMTV) Program, Operational and Organizational Plan was approved in September 1984. The User Requirement Document (JSOR) was established on 1 May 1986, and subsequently, the Army Cost and Operational Effectiveness Analysis (COEA) justified the program initiation on 4 June 1987. The FMTV Army Systems Acquisition Review Council (ASARC) approval was obtained on 5 August 1987, with further program approval from the Defense Acquisition Board (DAB) on 23 May 1988, which led to the prototype contracts being awarded on 21 October 1988.

The December 1988 SAR represented a procurement program of 15 years. As a result of competing Army priorities, the December 1989 SAR reflected the current 30 year procurement program. The FMTV ASARC IIIA milestone review was completed in September 1991, and granted approval to proceed to Low Rate Initial Production. The FMTV production contract was awarded to Stewart & Stevenson Services Inc. of Houston, TX on 11 October 1991. This was a five-year multiyear fixed price contract with an escalation clause which procures 10,843 trucks and includes option provisions. The new production facility is located in Sealy, TX.

In March 1992, the FMTV program was selected by Congress as part of the "Mentor-Protege" program to develop Small and Disadvantaged

FMTV, December 31, 1995

7a. Program Highlights (Cont'd):

Businesses as qualified subcontractors. A sole-source R&D contract was awarded to Stewart & Stevenson on 30 September 1992 to build and test hardware, as well as develop the drawing package for the deferred fuel tanker, expansible van, and trailers. These models will be incorporated into the competitive FMTV rebuy solicitation. On 25 June 1993 the FMTV Rollout ceremony was conducted at the Sealy, Texas production facility.

The Acquisition Program Baseline (APB) was approved on 07 March 1995 reflecting the schedule changes which breached the APB dated 12 May 1993 and were reported in the September 1994 quarterly exception SAR. The ASARC IIIB for Full Rate Production and Type Classification Standard was approved in August 1995, and the production APB was approved on 11 September 1995.

b. Significant Developments Since Last Report --
The FMTV system is expected to satisfy mission requirements.

c. Changes Since As Of Date --
FMTV First Unit Equipped (FUE) occurred at Ft. Bragg on 29 January 1996 based on Conditional Materiel Release approval.

8. Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline (APB) dated 11 September 1995. There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Milestone I/II (ASARC)	MAY 87	MAY 87	MAY 87
DAB Program Review	MAY 88	MAY 88	MAY 88
Prototype Contract Awards	OCT 88	OCT 88	OCT 88
First Prototype Delivery	JAN 90	JAN 90	JAN 90
FSD Development Testing			
Start	JAN 90	JAN 90	JAN 90
Complete	DEC 90	DEC 90	DEC 90
Early User Test and Evaluation			
Start	MAY 90	MAY 90	MAY 90
Complete	OCT 90	OCT 90	OCT 90
ASARC IIIA	SEP 91	SEP 91	SEP 91
Production Award (MYP)	OCT 91	OCT 91	OCT 91

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Call up 2nd Year of MYP	AUG 92	AUG 92	AUG 92
Production Qualification Test (PQT)			
Start	MAY 92	MAY 92	MAY 92
Complete	NOV 92	NOV 92	NOV 92
First Production Delivery	MAY 93	MAY 93	MAY 93
Initial Production Test (IPT)			
Start	MAY 93	MAY 93	MAY 93
Complete	JUL 95	JUL 95	JUL 95
IOT&E			
Start	APR 95	APR 95	APR 95
Complete	JUL 95	JUL 95	JUL 95
Call Up 3rd Year of MYP Increment 1	SEP 93	SEP 93	SEP 93
ASARC IIIB	AUG 95	AUG 95	AUG 95
Call Up 3rd Year of MYP Increment 2	JUL 95	JUL 95	JUL 95
Organic Support Capability	DEC 95	DEC 95	DEC 95
First Unit Equipped (FUE)/Initial Operational Capability (IOC)-FMTV	DEC 95	DEC 95	DEC 95
Call up 4th Year of MYP Increment 1	JUL 95	JUL 95	JUL 95
Call up 4th Year of MYP Increment 2	SEP 95	SEP 95	SEP 95
Call Up 5th Year of MYP	JUL 96	JUL 96	JUL 96
Production Decision Review Van, Tanker, & Trailer	JUN 96	JUN 96	JUN 96
PQT, Van & Tanker			
Start	NOV 99	NOV 99	NOV 99
Complete	DEC 99	DEC 99	DEC 99
IPT, Van & Tanker			
Start	FEB 00	FEB 00	FEB 00
Complete	OCT 00	OCT 00	OCT 00
IOT&E, Van & Tanker			
Start	APR 00	APR 00	APR 00
Complete	AUG 00	AUG 00	AUG 00
PQT, Trailer			
Start	NOV 99	NOV 99	NOV 99
Complete	DEC 99	DEC 99	DEC 99
IPT Trailer			
Start	FEB 00	FEB 00	FEB 00
Complete	OCT 00	OCT 00	OCT 00
IOT&E, Trailer			
Start	APR 00	APR 00	APR 00
Complete	AUG 00	AUG 00	AUG 00

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9b. Schedule (Cont'd):

- b. Previous Change Explanations -- None.
- c. Current Change Explanations -- None.
- d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Highway Speed on 2% Grade at GVW (mph)	55	55	/ 55	54.8	55
Highway Speed on 3% Grade at GVW (mph)	45	45	/ 45	48.7	48.7
Highway Speed on 2% Grade at GCW (mph)	40	40	/ 40	45.5	45.5
Highway Speed on 3% Grade at GCW (mph)	30	30	/ 30	35.8	35.8
LMTV Payload (tons)	2.5	2.5	/ 2.5	2.5	2.5
MTV Payload (tons)	5	5	/ 5	5	5
LMTV Towed Load (lbs)	7500	7500	/ 7500	7500	7500
MTV Towed Load (lbs)	21000	21000	/ 21000	21000	21000
Longitudinal Grade Operation (%)	60	60	/ 60	60	60
Slide Slope Operation (%)	30	30	/ 30	30	30
Fording Without Kit (inches)	30	30	/ 30	30	30
Fording With Kit (inches)	60	60	/ 60	60	60
Operating Range on Integral Fuel at GCW (miles)	300	300	/ 300	300	300
Reliability:			/	TBD	
MMBHM (miles)					
Truck, Cargo (LMTV)	3000	3000	/ 2450	12000	12000
Truck, Cargo (MTV)	2700	2700	/ 1950	12000	12000
Tractor	3300	3300	/ 2600	4800	4800

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Wrecker	2300	2300	/ 2000	4800	4800
Trailer (LMTV)	2800	2800	/ 1985	5000	5000
Trailer (MTV)	2600	2600	/ 1600	5000	5000
MMBOMF (miles)					
Truck, Cargo (LMTV)	2228	2228	/ 1832	>8279	16847
Truck, Cargo (MTV)	2035	2035	/ 1446	6386	6386
Tractor	2480	2480	/ 1960	3606	3606
Wrecker	1875	1875	/ 1500	4720	4720
Trailer (LMTV)	2056	2056	/ 1489	0	5000
Trailer (MTV)	1913	1913	/ 1200	0	5000
MMHPOM					
Truck, Cargo (LMTV)	.01	.01	/ .011	.0037	.01
Truck, Cargo (MTV)	.011	.011	/ .012	.0048	.011
Tractor	.012	.012	/ .015	.0062	.012
Wrecker	.015	.015	/ .018	.0069	.015
Trailer (LMTV)	.003	.003	/ .005	.0003	.0003
Trailer (MTV)	.003	.003	/ .005	.0006	.0006
Transportability:					
Surface Transportation (Highway, Ship & Rail)	H, S&R	H, S&R	/ H, S&R	H, S&R	H, S&R
Air Transportation	C-141	C-141	/ C-141	C-141	C-141
Mobility: (vehicle cone index)					
Truck Cargo	25	25	/ 25	25	25
Truck & Trailer Combination	35	35	/ 35	30	35

- MMBHMf - Mean Miles Between Hardware Mission Failure
- MMBOMF - Mean Miles Between Operational Mission Failure
- MMHPOM - Maintenance Man Hour/Operating Mile
- GVW - Gross Vehicle Weight
- GCW - Gross Combined Weight

NOTE: Demonstrated Performance values are the results of IOT&E testing in accordance with the approved TEMP at the time of testing dated March 1995. Definitions for calculating this data are IAW Section 3.3.b.(3) of the TEMP which states that "Crew maintenance man-hours are not included in the maintainability parameters." Also, the FMTV RAM Rationale Report states in Section 8, RAM

FMTV, December 31, 1995

10a. Performance Characteristics (Cont'd):

Parameters that the Maintenance Ratio for Unit is equal to the Total Maintenance man-hours divided by total miles. Total Unit maintenance man-hours equals the sum of the scheduled and unscheduled man-hours of maintenance performed by the unit maintenance personnel. The daily checks and services are excluded provided they do not exceed 30 minutes per day.

Both OPTEC and DOT&E have identified scored data with different results than that of the PM, which was developed by AMSAA and approved at Milestone III, Full Rate Production Decision on September 11, 1995.

- b. Previous Change Explanations -- None.
- c. Current Change Explanations -- None.
- d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

	<u>Production</u>	<u>Approved</u>	<u>Current</u>
a. Cost --	<u>Estimate</u>	<u>Program</u>	<u>Estimate</u>
Development (RDT&E)	121.8	121.8	120.2
Procurement	11472.4	11472.4	11544.6
Rollaway	(10677.1)		(10846.7)
Other Wpn Systems Cost	(777.3)		(678.4)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(18.0)		(19.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	11594.2	11594.2	11664.8
Escalation	7327.1	7327.1	4711.2
Development (RDT&E)	(-6.2)	(-6.2)	(-6.1)
Procurement	(7333.3)	(7333.3)	(4717.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	18921.3	18921.3	16376.0

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11b. Total Program Cost and Quantity (Cont'd):

	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>85488</u>	<u>85488</u>	<u>85488</u>
Total	85488	85488	85488

Note: Excludes 51 RDTE prototypes from the SAR Baseline and 51 from the Current Estimate that are not considered fully configured.

Total LRIP quantities produced prior to Milestone III, Full Rate Production Decision are 1,804 LMTV trucks and 779 MTV trucks.

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

Approved Program:

AAE Approved Acquisition Program Baseline dated September 11, 1995.

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (SEP 95 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY96\$)	11664.8	11594.2	
(2) Quantity	85488	85488	
(3) Unit Cost	0.136	0.136	0.61
b. Procurement			
(1) Cost (BY96\$)	11544.6	11472.4	
(2) Quantity	85488	85488	
(3) Unit Cost	0.135	0.134	0.63

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13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	115.6	18805.7	0.0	18921.3
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-0.6	-2198.6	-	-2199.2
Quantity	-	-	-	-
Schedule	0.7	-415.7	-	-415.0
Engineering	-	-	-	-
Estimating	-1.6	223.1	-	+221.5
Other	-	-	-	-
Support	-	-152.6	-	-152.6
Subtotal	-1.5	-2543.8	-	-2545.3
Total Changes	-1.5	-2543.8	-	-2545.3
Current Estimate	114.1	16261.9	-	16376.0

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13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	121.8	11472.4	0.0	11594.2
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Quantity	-	-	-	-
Schedule	0.2	-	-	+0.2
Engineering	-	-	-	-
Estimating	-1.8	169.6	-	+167.8
Other	-	-	-	-
Support	-	-97.4	-	-97.4
Subtotal	-1.6	+72.2	-	+70.6
Total Changes	-1.6	+72.2	-	+70.6
Current Estimate	120.2	11544.6	-	11664.8

b. Previous Change Explanations -- None.

c. Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	-0.6
Adjustment for Current and Prior Inflation. (Estimating)	-1.8	-1.6

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13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Change in R&D phases relative to the procurement phases. (Schedule)	+0.2	+0.7
RDT&E Subtotal	<u>-1.6</u>	<u>-1.5</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-2347.9
Economic adjustment for negative program change. (Economic)	N/A	+149.3
Adjustment for Current and Prior Inflation. (Estimating)	-3.3	-3.0
Correction to previous SAR variances to reclassify PM salaries from Support to Recurring Rollaway. (Estimating)	+59.4	+94.8
(Support)	-59.4	-94.8
Change in annual procurement buy profile of the MTV truck. (Schedule)		-283.5
Change in annual procurement buy profile of the LMTV truck. (Schedule)		-132.2
Adjustments due to changes in model mix (i.e. requirements for fewer of the less expensive models and more of the more expensive models). (Estimating)	+157.9	+196.9
Reduced estimate of unit manufacturing costs for the expansible van. (Estimating)	-44.4	-65.6
Adjustment for Current and Prior Inflation. (Support)	+0.2	+0.2
Increase in initial spares requirement. (Support)	+1.4	+1.2
Other Weapon Systems current estimate excludes contractor's claim, risk in President's Budget and greater cost of excise tax as more expensive variants are procured. (Support)	-32.1	-41.6
Total Package Fielding decreased to reflect the acceleration of annual procurement buy profile. (Support)	-7.5	-17.6
Procurement Subtotal	<u>+72.2</u>	<u>-2543.8</u>

FMTV, December 31, 1995

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

a. Initial SAR Estimate to Current SAR Baseline --

PAUC (Dev Est)	Changes								PAUC (Prod Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.072	-0.001	0.037	0.035	0.004	0.066	--	0.008	0.149	0.221

b. Current SAR Baseline to Current Estimate --

PAUC (Prod Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.221	-0.026	0.001	-0.005	--	0.003	--	-0.002	-0.029	0.192

15. Contract Information (Then-Year Dollars in Millions):

Current Contract Modifications have not yet been definitized, and therefore cannot be added to the Target Price of the contract.

a. Procurement --

FMTV: Stewart & Stevenson Serv., Houston, TX DAAE07-92-C-R001, FFP-EPA Award: October 11, 1991 Definitized: October 11, 1991	Initial Contract Price		
	Target	Ceiling	Qty
	\$1196.2	N/A	10843

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$1196.2	N/A	10843	\$1196.2	\$1196.2

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

FMTV, December 31, 1995

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 24.3% (9 yrs/37 yrs)
- (2) Percent Program Cost Appropriated: 7.1% (\$1159.6 / \$16376.0)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2024)	<u>Total</u>
RDT&E	89.2	-	-	24.9	114.1
Procurement	925.3	145.1	233.1	14958.4	16261.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1014.5	145.1	233.1	14983.3	16376.0

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY96 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: 2040 Research, Development, Test + Eval, Army

1988				12.0	9.8	9.8	9.8	3.0
1989				31.8	27.0	26.9	25.3	4.2
1990				22.1	19.5	19.2	19.0	4.1
1991				10.7	9.8	9.8	7.6	4.3
1992				11.6	10.9	10.9	8.0	3.0
1993				0.7	0.7	0.7	0.6	2.4

FMTV, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Program	Obligated	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1994				7.4	7.2	5.1	5.1	2.0
1995				4.3	4.3	4.0	3.3	1.9
1996								2.0
1997								2.2
1998								2.2
1999								2.3
2000								2.2
2001				1.4	1.6			2.2
2002				7.8	9.1			2.2
2003				2.9	3.4			2.2
2004								2.2
2005								2.2
2006								2.2
2007								2.2
2008								2.2
2009								2.2
2010								2.2
2011				2.0	2.8			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (t)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

2012				3.6	5.2			2.2
2013				1.9	2.8			2.2
Subtot				120.2	114.1	86.4	78.7	

Appropriation: 2035 Other Procurement, Army

1991	394	20.0	57.9	83.6	78.6	78.6	67.0	4.3
1992	1304	9.9	153.7	187.6	180.1	179.6	152.6	3.0
1993	1991	12.1	240.9	264.3	259.2	258.4	199.8	2.4
1994	179	2.6	28.6	37.3	37.2	34.2	6.6	2.0
1995	3352	11.9	341.1	362.3	370.2	353.5	4.8	1.9
1996	977	5.1	128.2	140.0	145.1	0.1		2.0
1997	1603	4.6	209.0	219.6	233.1			2.2
1998	972	1.3	125.1	127.8	138.7			2.2
1999	1510	4.1	187.1	214.4	237.8			2.3
2000	1649	20.2	207.2	246.3	279.3			2.2
2001	2066	18.1	254.5	294.7	341.5			2.2
2002	3280	4.5	430.0	466.1	552.0			2.2
2003	3281	4.6	421.3	456.2	552.1			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2004	3336	3.9	421.8	458.5	567.1			2.2
2005	3334	19.8	417.1	467.8	591.4			2.2
2006	3334	15.4	410.7	441.4	570.2			2.2
2007	3334	4.5	402.0	418.8	552.9			2.2
2008	3322	4.7	391.7	409.1	552.0			2.2
2009	3319	3.9	416.4	433.9	598.3			2.2
2010	3319	19.8	409.8	442.0	622.9			2.2
2011	3319	15.3	404.8	432.4	622.9			2.2
2012	3319	4.5	396.2	420.2	618.6			2.2
2013	3319	4.6	388.0	420.9	633.2			2.2
2014	3319	3.9	416.3	453.2	696.9			2.2
2015	3319	19.8	409.8	461.6	725.4			2.2
2016	3319	15.4	405.0	451.2	724.6			2.2
2017	3319	4.5	396.4	431.5	708.2			2.2
2018	3319	4.7	388.2	423.6	710.6			2.2
2019	2714	3.9	345.1	382.8	656.2			2.2
2020	2714	19.8	340.0	392.2	687.2			2.2
2021	2715	15.3	337.0	383.6	686.8			2.2

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16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

2022	2715	4.4	329.7	361.5	661.5			2.2
2023	2222	4.4	321.4	352.6	659.4			2.2
2024		1.3	1.9	5.6	10.7			2.2
Subtot	85488	312.8	10533.9	11544.6	16261.9	904.4	430.8	
Grand Total	85488	312.8	10533.9	11664.8	16376.0	990.8	509.5	

Expenditures and obligations are as of February 29, 1996.

Fiscal Year 2024 shows recurring flyaway costs and no quantity for truck procurement since only trailers will be procured.

17. Production Rate Data:

a. Deliveries to Date --		<u>Plan/Actual</u>
	RDT&E	51/51
	Procurement	8128/72

Vehicles produced to date will be accepted following completion of final government acceptance.

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

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18a. Operating and Support Costs (Cont'd):

a. Assumptions and Ground Rules --

The average miles/vehicle/year for the LMTV truck is 3,371 miles; the MTV truck is 6,006 miles; the LMTV trailer is 1,725 miles; the MTV trailer is 3,000 miles. The average years of operation (useful life) is 20 years. The dedicated crew/vehicle/year for LMTV trucks is .1 annual manyears per vehicle; for MTV trucks is .25 annual manyears per vehicle. Dedicated crew is not applicable for trailers.

b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per LMTV	Ave Annual Cost Per MTV
Personnel	5.0	8.3
O&S Consumables	1.8	4.5
Direct Depot Maint	0.2	0.2
Sustaining Investment	0.1	0.1
Other Direct Costs	0.1	0.1
Indirect Costs	2.2	3.4
Total	9.4	16.6

18b. Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost LMTV Trailer	Avg Annual Cost MTV Trailer
Personnel	1.24	1.24
O&S Consumables	0.03	0.06
Direct Depot Maint	0.07	0.10
Sustaining Investment	0.01	0.02
Other Direct Costs	0.00	0.00
Indirect Costs	0.69	0.69
Total	2.04	2.11

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18c. Operating and Support Costs (Cont'd):

c. Contractor Support Costs -- (Current (Then-Year) Dollars
in Millions)

Funding	FY1995 & Prior	FY1996	FY1997	Balance To Complete	Total
Other	0.5	---	---	---	0.5
Total	0.5	---	---	---	0.5

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A-20 PLS

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: PLS (FHTV)

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

Palletized Load System (PLS)/Family of Heavy Tactical Vehicles (FHTV)

2. DoD Component: Army

3. Responsible Office and Telephone Number:

U.S. Army, Program Executive	COL James A. Wank
Office, Tactical Wheeled Vehicles	Assigned: July 15, 1994
ATTN: SFAE-TWV-PLS (COL Wank)	AV 786-5800 COMM (810) 574-5800
Warren, MI 48397-5000	

4. Program Elements/Procurement Line Items:

RDTE&E:

PE 64622 Project D659

PROCUREMENT:

APPN 2035 ICN D16500 (Army)
 APPN 2035 ICN DVO410 (Army)
 APPN 2035 ICN DVO420 (Army)
 APPN 2035 ICN D08900 (Army)
 APPN 2035 ICN D16100 (Army)
 APPN 2035 ICN D16101 (Army)

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DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

5. Related Programs: None.

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96-C-0451

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6. Mission and Description:

The Palletized Load System (PLS) program is comprised of a 16.5 ton tactical truck with trailer and flatracks (dismountable cargo beds). The PLS employs the maximum practical use of commercial components. Each truck/trailer combination is provided with a common flatrack. The PLS trailer has a cargo capacity equal to that of the prime mover. The PLS program accommodates two mission oriented configurations: with and without a material handling crane, and kit applications in order to satisfy currently existing individual Army ground transportation requirements in the specified payload range. Flatrack interoperability with the equipment of European forces is a requirement. The PLS is a key transportation component of the Maneuver Oriented Ammunition Distribution System (MOADS) in support of the field artillery.

7. Program Highlights:

a. Significant Historical Developments --

The PLS program conducted a successful Organizational/Operational conceptual evaluation at Ft. Lewis, WA in 1984. Force Development Test and Experimentation was conducted in late 1986 at Ft. Hood, TX. Following this success, the Army Systems Acquisition Review Council (ASARC) approved the program in May 1987. Congressional guidance stipulated that the program receive Non-Developmental Item (NDI) determination, that manufacture and assembly occur in the USA, and that authority for source selection would be vested in the Department of the Navy. The Request for Proposal for the prototype phase was released to three competing contractors in November 1988, and three contracts were awarded in January 1989. The contractors receiving awards were GM-MVO, Oshkosh Truck Corporation and PACCAR Government Group. A formal request was made of Congress in July 1989 for an extension to the original December 1989 deadline for selection of the production source until June 1990. This extension was approved in the FY90/91 Defense Authorization Act. The first prototype vehicle was delivered in August 1989, and testing proceeded on schedule.

A Memorandum of Understanding has been executed with Great Britain, France, and Germany to ensure interoperability of PLS flatracks with their comparable systems. Technical data has been exchanged between the parties to define the necessary interfaces. The British flatrack was successfully tested on the U.S. PLS during the prototype phase. The German and French flatracks will be evaluated when available.

On 10 September 1990 the Milestone IIIA Defense Acquisition Board (DAB) approved PLS for Low Rate Initial Production (LRIP). In July 1990, Oshkosh Truck Corp. was selected as the apparent successful bidder for the PLS solicitation. A five-year multiyear contract was awarded to Oshkosh on 28 September 1990. A quarterly exception SAR was submitted for 30 September 1990 to report Nunn-McCurdy breaches

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7a. Program Highlights (Cont'd):

in accordance with public law. The Secretary of the Army notified Congress on 13 November 1990 that breaches had occurred in both Current Procurement Unit Cost (CPUC) for trucks, trailers and flatracks, and the Program Acquisition Unit Cost (PAUC) for trailers and flatracks, as a result of repricing the reduced program quantities with the prices from the contract. Secretary of Defense certification was submitted to Congress on 13 December 1990. The Acquisition Program Baseline (APB) dated 31 October 1990, was approved and established costs in FY91 Base Year Dollars (previous base year was FY89). Oshkosh Truck Corp. applied to the Internal Revenue Service for and received exemption from Federal Retail Excise Tax (FRET) due to its off-road tactical mission. An enhanced flatrack program was incorporated into current production, as directed by Congress. This will enhance sealift capability. The Test and Evaluation Master Plan (TEMP) was approved by OSD (Dir of Op Test & Eval) in November 1991. On 14 December 1992, the PLS ASARC was successfully conducted for the Milestone III Decision. The Acquisition Decision Memorandum (ADM) was signed on 16 December 1992 authorizing full rate production with conditional Type Classification Standard, subject to submission of the Beyond Low Rate Initial Production (LRIP) Report to Congress. The Production Acquisition Program Baseline (APB) for PLS was approved on 28 December 1992.

The Beyond Low Rate Initial Production (LRIP) Report was sent to Congress on 30 April 1993, allowing award of the 4th Program Year call-up on 30 April 1993. The PLS Enhanced Flatrack completed and passed Conventional Systems Committee (CSC) certification in October 1993. On 3 November 1993 the Army Acquisition Executive approved Type Classification-Standard for the PLS. On 11 December 1993, final transportability testing was completed by successfully passing the C-141 aircraft loading.

Full AR 700-34 release was approved by the Commander, Army Materiel Command (AMC) on 31 January 1994. First Unit Equipped (Ft. Hood, TX) was accomplished on 9 February 1994 and Initial Operating Capability was achieved on 11 February 1994. Oshkosh Truck Corp. was awarded the contract to produce 5000 enhanced flatracks in September 1994.

The PLS is expected to satisfy mission requirements.

b. Significant Developments Since Last Report --

A total of 2363 trucks, 1059 trailers have been fielded through 31 December 1995. This represents 87% and 75% contract completion respectively. Fieldings were conducted in Germany (51st Medium Truck Company), Ft. Campbell, Ft. Irwin, Ft. Eustis, Ft. Riley, Ft. Drum and Ft. Bragg. Selected National Guard sites have also been fielded.

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7b. Program Highlights (Cont'd):

Flatracks have been damaged in Europe when used to carry M113 vehicles. Units were advised not to load any vehicles on flatracks pending receipt of upgraded flatracks designed for this use.

In June 1995 a solicitation was released to acquire 3,000 PLS M2 flatracks, separate from the PLS multiyear contract. This was pursued as a competitive Small and Disadvantaged Business (SDB) set aside.

c. Changes Since As Of Date --

As a result of a contract appeal ruling, the M2 flatrack award to Steeltech was overturned due to their ineligibility as a Small and Disadvantaged Business (SDB) concern. The contract award planned for January 1996 was delayed by protest, and contract award to a new vendor is scheduled for March 1996.

In support of the Army requirements for Bosnia, 54 Personnel Protection Kits (armor) are being jointly delivered by TARDEC and the PM Office for the PLS. In country delivery is anticipated for May 1996.

8. Threshold Breaches:

There are no breaches to the Approved Acquisition Program Baseline (APB) dated 28 December 1992 and there are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I/II (ASARC)	MAY 87	MAY 87	MAY 87
ROC Approval	NOV 87	NOV 87	NOV 87
DAB Program Review	MAY 88	MAY 88	MAY 88
Prototype Contract Awards (3 Contractors)	JAN 89	JAN 89	JAN 89
First Prototype Delivery	AUG 89	AUG 89	AUG 89
FSD Development Testing			
Start	JAN 90	JAN 90	SEP 89
Complete	SEP 89	SEP 89	SEP 89
Early User Test and Experimentation			
Testing			
Start	JAN 90	JAN 90	JAN 90
Complete	MAR 90	MAR 90	MAR 90

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Milestone IIIA (DAB)	SEP 90	SEP 90	SEP 90
Production Award	SEP 90	SEP 90	SEP 90
Pre-Shakedown Test			
Start	JAN 91	JAN 91	JAN 91
Complete	MAR 91	MAR 91	MAR 91
Shakedown Test			
Start	JUL 91	JUL 91	JUL 91
Complete	DEC 91	DEC 91	DEC 91
First Production Delivery	JAN 92	JAN 92	JAN 92
Initial Production Test			
Start	JAN 92	JAN 92	JAN 92
Complete	OCT 92	OCT 92	OCT 92
IOT&E			
Start	MAY 92	MAY 92	MAY 92
Complete	AUG 92	AUG 92	AUG 92
Milestone IIIB (ASARC)	NOV 92	NOV 92	DEC 92
First Unit Equipped (FUE)	AUG 93	AUG 93	FEB 94
Initial Operating Capability (IOC)	SEP 93	SEP 93	FEB 94

b. Previous Change Explanations --

Shakedown Test was delayed and expanded, which also caused changes to subsequent milestones. The FSD Development Testing was reduced to a three week test ending in September 1989. Schedule changes for IOT&E, Milestone IIIB and FUE/IOC reflected the Milestone III Decision APB dated 28 December 1992. Schedule changes for completion of transportability testing and the subsequent materiel release process caused the FUE date to change from August 1993 to February 1994 and IOC to change from September 1993 to March 1994. However, IOC was actually achieved on 11 February 1994 at Ft. Hood, TX.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

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10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
Highway Speed on 2% Grade at GVW (mph)	50	50	/ 45	50	50	
Highway Speed on 2% Grade at GCW (mph)	35	35	/ 30	38	38	
PLS Truck/Trailer Load (tons)	16.5	16.5	/ 16.5	16.5	16.5	
Longitudinal Grade Operation (%)	30	30	/ 30	30	30	
Side Slope Operation (%)	30	30	/ 30	30	30	
Fording Capability (inches)	48	48	/ 30	48	48	
Operating Range on Integral Fuel at GCW (miles)	225	225	/ 225	266	266	
RELIABILITY						
Truck						
MMBEMF (miles)	2250	2250	/ 2250	3734	3734	
MMBOMF (miles)	1500	1500	/ 1500	2703	2703	
Trailer						
MMBHMF (miles)	2280	2280	/ 2280	11998	11998	
MMBOMF (miles)	1900	1900	/ 1900	7835	7835	(Ch-1)
MHC						
MHBHMF (hours)	195	195	/ 195	432	432	
MHBOMF (hours)	150	150	/ 150	384	384	
MAINTENANCE RATIO						
TRUCK						
MMHPOM (Operational)	0.015	0.015	/ 0.015	0.014	0.014	(Ch-1)
MMHPOM (Technical)	0.013	0.013	/ 0.013	0.013	0.013	
Trailer						
MMHPOM (Operational)	0.005	0.005	/ 0.005	0.005	0.005	(Ch-1)
MMHPOM (Technical)	0.004	0.004	/ 0.004	0.002	0.002	
MHC						
MMHPOH (Operational)	0.100	0.100	/ 0.100	0.059	0.059	
MMHPOH (Technical)	0.083	0.083	/ 0.083	0.054	0.054	(Ch-1)
TRANSPORTABILITY						
Surface Transportation (Highway, Ship & Rail)	(H,S&R)	(H,S&R)	/ (H,S&R)	(H,S&R)	(H,S&R)	
Air Transportation	C-141	C-141	/ C-141	C-141	C-141	
MOBILITY (Vehicle Cone Index)						
Truck with MHC	36	36	/ 39	33	33	

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10a. Performance Characteristics (Cont'd):

	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Truck without MHC	34	34	/ 37	33	33
Truck & Trailer Combination	50	50	/ 50	39	39

- MMBHMf - Mean Miles Between Hardware Mission Failure
- MMBOMf - Mean Miles Between Operational Mission Failure
- MHBHMf - Mean Hours Between Hardware Mission Failure
- MHBOMf - Mean Hours Between Operational Mission Failure
- MMHPOM - Maintenance Man Hour/Operating Mile
- MMHPOH - Maintenance Man Hour/Operating Hour
- GVW - Gross Vehicle Weight
- GCW - Gross Combined Weight
- MHC - Materiel Handling Crane

NOTE: There is a difference of opinion between the reliability (Demonstrated Performance) values approved by the ASARC at Milestone III, Full Rate Decision and that which was developed by DOT&E. DOT&E has evaluated PLS as unsuitable. This is due primarily to a long standing disagreement between Army and DOT&E on failure mode definitions from IOT&E and consequent differences of opinion on PLS reliability. There is currently an agreement between DOT&E and the Army that the Army will utilize sample data collection in Bosnia, Hungary, Germany and/or at the NTC in lieu of follow-on testing.

b. Previous Change Explanations --

Initial changes to the performance data (Fording Capability, Reliability for MHC, Mobility for truck with MHC and truck without MHC) result from the Milestone IIIB Decision on 28 December 1992.

All other changes to the performance data are due to final IOT&E test scoring results. All Current Estimates reflect the improvements shown in final Demonstrated Performance. Highway speed on 2% grade at GVW was 50/45 and is now 50; highway speed on 2% grade at GCW was 35/30 and improved to 38; operating range improved from 225 miles to 266 miles. Reliability for trucks (MMBHMf) was 2250 and improved to 3734; trucks (MMBOMf) was 1500 and improved to 2703; trailers (MMBHMf) was 2280 and improved to 11998; trailers (MMBOMf) was 1900 and improved to 6857; MHC (MMBHMf) was 195 and improved to 432; MHC (MHBOMf) was 150 and improved to 384. The Maintenance ratio for trucks (operational) was 0.015 and improved to 0.013; trailers (operational) was 0.005 and improved to 0.002; trailers (technical) was 0.004 and improved to 0.002; MHC (operational) was 0.100 and

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10b. Performance Characteristics (Cont'd):

improved to 0.059; MHC (technical) was 0.083 and improved to 0.059; Mobility for truck with MHC was 36 and improved to 33; truck without MHC was 34 and improved to 33; truck & trailer combination was 50 and improved to 39.

c. Current Change Explanations --

(Ch-1) Demonstrated Performance and Current Estimate values have been updated to reflect assessed scoring. The MMBOMF for Trailer was 6857 and is now 7835; MMHPOM for truck was 0.013 and is now 0.014; trailer was 0.002 and is now 0.005; MHC was 0.059 and is now 0.054.

d. References --

Production Estimate:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Development (RDT&E)	44.0	44.0	46.9
Procurement	1521.7	1521.7	1131.9
Recurring Production	(1463.3)		(1088.8)
Non-recurring Production	(28.8)		(27.2)
Total Rollaway	(1492.1)		(1116.0)
Other Wpn Sys Cost	(28.8)		(15.9)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.8)		(0.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 93 Base-Year \$	1565.7	1565.7	1178.8
 Escalation	 129.6	 129.6	 58.4
Development (RDT&E)	(-4.5)	(-4.5)	(-3.9)
Procurement	(134.1)	(134.1)	(62.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1695.3	1695.3	1237.2

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11b. Total Program Cost and Quantity (Cont'd):

	<u>Production Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
b. Quantity --			
Development (RDTE&E)	0	0	0
Procurement	<u>3386</u>	<u>3386</u>	<u>2857</u>
Total	3386	3386	2857

Note: Excludes 27 RDTE prototypes from the SAR Baseline and 27 from the Current Estimate that are not considered fully configured.

The LRIP was approved in September 1990 for 504 trucks and was based on production not to exceed 30 per month prior to IOT&E approval.

c. Foreign Military Sales/International Cooperative Programs -- Although PLS is not an International Cooperative Program in the formal sense, a Memorandum of Understanding has been made with Great Britain, Germany, and France to ensure interoperability of PLS flatracks with their comparable systems.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

AAE Approved Acquisition Program Baseline Dated December 28, 1992.

Approved Program:

AAE Approved Acquisition Program Baseline dated December 28, 1992.

12. Unit Cost Summary:

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (DEC 92 APB)	<u>Percent Change</u>
a. Total Program			
(1) Cost (BY93\$)	1178.8	1565.7	
(2) Quantity	2857	3386	
(3) Unit Cost	0.413	0.462	-10.77

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PLS (FHTV), December 31, 1995

12. Unit Cost Summary (Cont'd):

	<u>Current</u> <u>Estimate</u>	<u>UCR</u> <u>Baseline</u>	<u>Percent</u> <u>Change</u>
b. Procurement			
(1) Cost (BY93\$)	1131.9	1521.7	
(2) Quantity	2857	3386	
(3) Unit Cost	0.396	0.449	-11.84

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PLS (FHTV), December 31, 1995

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	39.5	1655.8	0.0	1695.3
Previous Changes:				
Economic	+0.1	-25.0	-	-24.9
Quantity	-	-555.2	-	-555.2
Schedule	-	-1.2	-	-1.2
Engineering	+2.4	-101.7	-	-99.3
Estimating	+0.2	+118.3	-	+118.5
Other	-	-	-	-
Support	-	-20.8	-	-20.8
Subtotal	+2.7	-585.6	-	-582.9
Current Changes:				
Economic	0.1	-8.5	-	-8.4
Quantity	-	155.9	-	+155.9
Schedule	-	-	-	-
Engineering	0.8	1.3	-	+2.1
Estimating	-0.1	-25.9	-	-26.0
Other	-	-	-	-
Support	-	1.2	-	+1.2
Subtotal	+0.8	+124.0	-	+124.8
Total Changes	+3.5	-461.6	-	-458.1
Current Estimate	43.0	1194.2	-	1237.2

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PLS (FHTV), December 31, 1995

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1993 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	44.0	1521.7	0.0	1565.7
Previous Changes:				
Quantity	-	-496.7	-	-496.7
Schedule	-	-	-	-
Engineering	+2.3	-87.0	-	-84.7
Estimating	-	+91.4	-	+91.4
Other	-	-	-	-
Support	-	-14.8	-	-14.8
Subtotal	+2.3	-507.1	-	-504.8
Current Changes:				
Quantity	-	132.4	-	+132.4
Schedule	-	-	-	-
Engineering	0.7	1.1	-	+1.8
Estimating	-0.1	-17.3	-	-17.4
Other	-	-	-	-
Support	-	1.1	-	+1.1
Subtotal	+0.6	+117.3	-	+117.9
Total Changes	+2.9	-389.8	-	-386.9
Current Estimate	46.9	1131.9	-	1178.8

b. Previous Change Explanations --

RDT&E

Engineering: Fabricate/test engineering equipment for Heavy Repair Vehicle and flatrack.

Estimating: Funding for FMTV testing.

Procurement

Economic: Revised escalation indices.

Quantity: Reduced trucks from 3386 to 2691, trailers from 1645 to 1311 and flatracks from 46461 to 13874.

Estimating: Revised estimate for Enhanced Flatracks quantity change. Revised estimate for ECOs.

Support: Revised test requirements.

PLS (FHTV), December 31, 1995

13c. Cost Variance Analysis (Cont'd):

c. 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. (Estimating)	-0.1	-0.1
Cost for studies of alternative flatracks and PLS fuel carry capability. (Engineering)	+0.7	+0.8
RDT&E Subtotal	+0.6	+0.8

(2) Procurement

Revised escalation indices. (Economic)	N/A	-12.6
Economic adjustment for negative program change. (Economic)	N/A	+4.1
Adjustment for Current and Prior Inflation. (Estimating)	+9.0	+11.2
Total variance associated with quantity increases (truck, trailer and flatrack).	+133.5	+157.2
Increase of 179 trucks from 2678 to 2857. (Quantity)	+43.5	+47.8
Increase of 50 trailers from 1411 to 1461. (Quantity)	+1.9	+2.1
Increase of 8543 flatracks from 24745 to 33288. (Quantity)	+87.0	+106.0
Allocation to engineering variance resulting from quantity change. (Engineering)	+1.1	+1.3
Change in flatrack and container handling device unit cost. (Estimating)	-22.9	-32.8
Revised estimate for engineering changes and in-house matrix support due to reprogram of funds. (Estimating)	-4.0	-5.0
Increase in test requirements. (Estimating)	+0.6	+0.7
Adjustment for Current and Prior Inflation. (Support)	+0.1	+0.1
Decrease in transportation, NET, and initial support costs associated with increase in quantity. (Support)	+1.0	+1.1

PLS (FHTV), December 31, 1995

15. Contract Information (Cont'd):

<u>PLS-Intermodal Flatracks:</u>			<u>Initial Contract Price</u>		
			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Oshkosh Truck Corporation, Oshkosh, WI					
DAAE07-95-C-R044, FFP-EPA			\$82.5	N/A	5000
Award: February 28, 1995					
Definitized: February 28, 1995					
<u>Current Contract Price</u>			<u>Estimated Price At Completion</u>		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$82.5	N/A	5000	\$82.5	\$82.5	

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

The initial contract quantity of 14,706 reflected the total basic contract for trucks, trailers and flatracks on the five-year multiyear contract. The contract cost and quantity were modified so that certain flatracks are procured under a new contract with Oshkosh Truck Corp., and the original contract was reduced in price and quantity to reflect the reduced number of flatracks.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 64.3% (9 yrs/14 yrs)
- (2) Percent Program Cost Appropriated: 86.8% (\$1073.5 / \$1237.2)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	42.2	0.8	-	-	43.0
Procurement	979.2	51.3	77.4	86.3	1194.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1021.4	52.1	77.4	86.3	1237.2

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PLS (FHTV), December 31, 1995

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obli- gated	Ex- pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1988				5.7	4.9	4.9	4.9	3.0
1989				31.3	28.2	28.2	28.2	4.2
1990				3.3	3.1	3.1	3.1	4.1
1991								4.3
1992				2.2	2.2	2.2	2.2	3.0
1993				1.8	1.8	1.8	1.8	2.4
1994				1.9	2.0	2.0	1.0	2.0
1995								1.9
1996				0.7	0.8			2.0
Subtot				46.9	43.0	42.2	41.2	

Appropriation: 2035 Other Procurement, Army

1990	81	10.5	29.1	40.1	38.8	38.2	35.4	4.1
1991	423	1.7	127.3	129.1	128.6	126.6	126.6	4.3
1992	281	0.8	92.3	93.5	95.2	95.2	95.2	3.0
1993	961	2.6	289.7	294.5	306.3	301.7	288.9	2.4
1994	932	3.3	362.9	373.3	394.6	390.3	187.3	2.0

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PLS (FHTV), December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY93 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2035 Other Procurement, Army (Cont'd)

1995		3.2	8.6	14.5	15.7	10.9	3.2	1.9
1996	179	2.3	42.4	46.7	51.3			2.0
1997		1.9	66.0	68.8	77.4			2.2
1998		0.5	7.7	8.2	9.4			2.2
1999		0.4	8.0	8.4	9.9			2.3
2000			14.1	14.1	17.0			2.2
2001			40.7	40.7	50.0			2.2
Subtot	2857	27.2	1088.8	1131.9	1194.2	962.9	736.6	
Grand Total	2857	27.2	1088.8	1178.8	1237.2	1005.1	777.8	

Expenditures and obligations are as of 29 February 1996.

Fiscal Years 1995 through 2001 show recurring flyaway costs and no quantity for truck procurement. These years reflect trailer and flatrack procurement. Quantities for trucks, trailers and flatracks are:

	Trucks	Trailers	Flatracks
1990	81	126	339
1991	423	124	1776
1992	281	324	1181
1993	961	224	4839
1994	932	442	9910
1995	0	171	0
1996	179	50	0
1997	0	0	5897

PLS (FHTV), December 31, 1995

16c. Program Funding Summary (Cont'd):

	Trucks	Trailers	Flatracks
1998	0	0	800
1999	0	0	828
2000	0	0	1792
2001	0	0	5926
Total	2857	1461	33288

17. Production Rate Data:

a. Deliveries to Date --

	<u>Plan/Actual</u>
RDT&E	27/27
Procurement	2443/2443

RDT&E deliveries are complete (27 trucks, 18 trailers and 90 flatracks). Procurement deliveries are as of 1 March 1996.

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The average miles per vehicle year for the PLS with crane with winch is 3,000 miles; the PLS with crane without winch is 3,000 miles; the PLS without crane without winch is 4,900 miles; the trailer is 4,900 miles. The average Years of Operation (Useful Life) is 20 years. The dedicated Crew/Vehicle/Year for PLS trucks is 2.03 manyear/vehicle/year. There are no separately estimated Operating and Support Costs for flatracks. The Baseline Cost Estimate dated September 1992 is the source of the costs in section 18 b.

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18b. Operating and Support Costs (Cont'd):

b. Costs -- (FY 1993 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per PLS System	Avg Annual Cost Per Trailer
Personnel	36.2	1.0
O&S Consumables	7.8	0.6
Direct Depot Maint	0.0	0.0
Sustaining Investment	0.2	0.0
Other Direct Costs	0.3	0.0
Indirect Costs	3.9	0.1
Total	48.4	1.7

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RGS:DD-COMP(Q&A)823)
PROGRAM: JSOW (AIWS)

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Joint Standoff Weapon Program (JSOW)

2. (U) DoD Component: Navy

Joint Participants:
Air Force

3. (U) Responsible Office and Telephone Number:

Conventional Strike Weapons	CAPT J. V. Chenevey
FMA-201	Assigned: May 10, 1993
Arlington, VA 22243-1201	AV DSN 664-2410
COMM (703)604-2410X4849	

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 0604727N

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AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

96 C-0439

JSOW (AIWS), December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 1507 ICN 223000 (Navy)

APPN 3020 ICN 1234 (Air Force)

MILCON:

PE 1205NCN (Shared)

5. (U) Related Programs:

F/A-18 aircraft and Tactical Aircraft Mission Planning System (TAMPS).

6. (U) Mission and Description:

The JSOW is an air-to-ground weapon designed to attack a variety of targets during day, night, and adverse weather conditions. JSOW will enhance aircraft survivability as compared to current interdiction weapon systems by providing the capability for launch aircraft to standoff outside the range of most target area surface-to-air threat systems. The JSOW Global Positioning System (GPS)/Inertial Navigation System (INS) capability will allow several target kills per aircraft sortie. The Navy will integrate the JSOW onto the F/A-18 and AV-8B aircraft, and the Air Force will integrate the JSOW onto the F-16 C/D, F-15E and bomber aircraft. A main focus of the JSOW development has been high payoff, low risk, low cost engineering solutions to effectively achieve both operational requirements and a low unit procurement cost. The program objective is to obtain an ample inventory of precision standoff weapons for use against the numerous, yet tactically significant targets which must be attacked in any conflict.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The original Acquisition Plan (AP), AP-88-21, was approved on 1 July 1988. The JSOW program was reviewed by the Defense Acquisition Board (DAB) on 5 June 1989 and an Acquisition Decision Memorandum (ADM) dated 29 June 1989 granted Milestone I approval to enter an 18 month Demonstration/Validation (DEM/VAL) phase for the JSOW Baseline program and directed the Navy to develop a plan for P3I. The JSOW Baseline program completed DEM/VAL in July 1991 and the Source Selection process in December 1991. JSOW successfully completed a MS II DAB on 8 June 1992. The ADM directed commencement of the Engineering and Manufacturing Development (ESMD) Phase. It also changed the name of the program from Advanced Interdiction Weapon System (AIWS) to Joint Standoff Weapon (JSOW). In June 92 a contract was awarded to Texas Instruments (TI) for the JSOW Baseline ESMD effort. A successful Preliminary Design Review was completed on April 26, 1993. The EMD contract Subsequent Application Review (SAR) at Texas Instruments was successfully completed on September 24, 1993. On November 19, 1993, Airworthiness testing commenced with a

JSOW (AIWS), December 31, 1995

7a. (U) Program Highlights (Cont'd):

successful flutter flight test. The initial captive carriage testing was performed at Patuxent River, MD with a F/A-18 loadout which included four (4) JSOW Structural Test Vehicles (STV-C1 through C3 and STV-D).

On October 28, 1994, OSD Program Decision Memorandum Number Two (PDM #2) directed the USAF to plan on inventory quantities of 3,000 JSOW Baseline and 3,000 JSOW/BLU-108 weapons. The JSOW continued to perform the test program requirements with the F/A-18 aircraft on, or above expectation. In December 1994, the JSOW successfully completed the final DT-IIA Airworthiness Jettison test and accomplished a major program milestone with the first STV-F weapon free flight.

b. (U) Significant Developments Since Last Report --
 In April 95, the JSOW Program received Defense Acquisition Board (DAB) approval for the Unitary Variant and BLU-108 programs to enter Milestone II. The Baseline (AGM-154A) Acquisition Program Baseline (APB) revision included the addition of the Unitary Variant and BLU-108 programs. The following represents the significant developments of the past year for each JSOW variant.

BASELINE VARIANT

The Baseline DT-IIA test program on the F/A-18 aircraft demonstrated continued success by completing the final test in February 95.

In March 95, the Baseline E&MD contract Critical Design Review (CDR) was held at Texas Instruments (TI).

The DT-IIB test phase was conducted from March 95 through December 95. Overall results were successful and will allow the program to proceed into the next phase of testing, DT-IIC. The following table describes the highlights of the DT-IIB test phase.

EVENT	DATE	RESULT	COMMENTS
ADM-B1	Mar 95	Success	Max range demonstrated
ADM-B2	May 95	Failure	Wings failed to deploy
ADM-B2a	Jun 95	Success	First dispense
ADM-B4	Jul 95	Success	Full interface F-18 OFP and JSOW
ADM-B7	Aug 95	Success	Off-axis, long range
ADM-B6	Sep 95	Abort	Fin unlocked prior to launch
	Oct 95	Success	Off-axis, low altitude
ADM-B8	Oct 95	No Test	FTS engaged at launch
ADM-B3	Nov 95	Success	Low altitude, mid velocity

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7b. (U) Program Highlights (Cont'd):

ADM-B10	Dec 95	Success	High altitude target, high velocity
ADM-B8a	Dec 95	Success	3D waypoints, off-axis

This successful completion of the DT-IIB test phase sets the stage for the JSOW program to accelerate into the new year with the confidence, maturity and proven performance that will ensure similar program successes.

All objectives of the initial Functional Configuration Audit (FCA) were satisfied by a series of incremental compliance reviews from late July through early December 1995. Each initial FCA requirement was assessed by the appropriate government Integrated Product Team development leader and their Texas Instruments counterpart.

All objectives of the Production Verification Review were satisfied by:

- A series of design reviews (STV-F, ADM, EDM and CDR)
- Active Failure Review Board and configuration management processes
- Continued concurrent engineering efforts evidenced from the onset of the E&MD contract
- Utilization of production representative processes during the test program hardware builds/integration.

BLU-108 VARIANT

The E&MD contract for JSOW/BLU-108 variant was awarded on 30 June 1995 and completed an Integrated Baseline Review for the E&MD contract. The November 1995 review captured the results of a four month effort in which Government and Contractor product team members:

- Restructured old product team organization to establish new, joint service, E&MD product team organization
- Embraced latest DoD acquisition streamlining initiatives to provide program cost avoidance and preserve schedule
- Developed a program measurement baseline that accounts for synergy between the JSOW Baseline and JSOW/BLU-108 development efforts.

This effort provided insights into the development of program costs and schedules and increased program confidence in the identification of any remaining risks to the program.

All objectives of the BLU-108 Preliminary Design Review (PDR) were satisfied by a series of in-process reviews during the months of September and October 1995. No Critical Requests for Action were

JSOW (AIWS), December 31, 1995

7b. (U) Program Highlights (Cont'd):

necessary. The success of the PDR attests to the maturity of the dispenser design and the readiness of JSOW/BLU-108 to proceed into it's development test phase.

UNITARY VARIANT

The Unitary E&MD contract was awarded on 30 August 1995.

The Unitary Integrated Guidance Simulation, up and running in December 1995, will be used by Fleet Operators to evaluate Man-in-the-loop scenarios at the Warrior Product Team in January and will be used to evaluate system effectiveness and develop system specifications.

The JSOW Unitary Systems Requirements Review (SRR) is planned for March 1996.

A Critical Process Review (CPR) is scheduled for late April 1996. This review is for the Program Executive Officer (PEO) to assess the overall status of the program. The contractor will present the status of design reviews, cost performance, schedule performance and risk status.

The JSOW system will satisfy mission requirements.

c. (U) Changes Since As Of Date --

The Integrated Baseline Review for the Unitary E&MD was held in January 1996. This review established the contractor E&MD development program cost and schedule baseline.

8. (U) Threshold Breaches:

There are no breaches to the Acquisition Program Baseline Agreement dated 26 April 1995. There are no Nunn-McCurdy unit cost breaches.

9. (U) Schedule:

Baseline/BLU-108

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone I	JUN 89	JUN 89	JUN 89
DEMVAL Contract Award	JUN 89	JUN 89	JUN 89
Early Operational Assessment (OT-I) Start	MAR 91	MAR 91	MAR 91

JSOW (AIWS), December 31, 1995

9a. (U) Schedule (Cont'd):
Baseline/BLU-108

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Complete (Report)	OCT 91	OCT 91	OCT 91
Milestone II	APR 92	APR 92	JUN 92
EMD Contract Award	MAY 92	MAY 92	JUN 92
Preliminary Design Review	NOV 92	NOV 92	JAN 93
Critical Design Review	DEC 94	DEC 94	APR 95
IOT&E (OT-IIA)			
Start	DEC 95	DEC 95	FEB 96 (Ch-1)
Complete (Report)	JUL 96	JUL 96	NOV 96
TECHEVAL (DT-IIC)			
Start	NOV 95	NOV 95	FEB 96 (Ch-1)
Complete (Report)	JUL 96	JUL 96	DEC 96 (Ch-1)
Functional Configuration Audit	OCT 95	OCT 95	DEC 95
Production Verification Review	APR 96	APR 96	JAN 96 (Ch-2)
Production Readiness Review	JUN 96	JUN 96	AUG 96
LRIP Contract Option Exercised	OCT 96	OCT 96	MAR 97 (Ch-1)
LRIP First Delivery	MAY 98	MAY 98	JUL 98
OPEVAL (OT-IIB)			
Start	AUG 96	AUG 96	JAN 97 (Ch-1)
Complete (Report)	JUL 97	JUL 97	SEP 97
Organizational Level Support	APR 00	APR 00	JUN 00
Intermediate Level Support	JUL 00	JUL 00	SEP 00

(b)(1)

BLU-108 SYSTEM

Pre-EMD Contract Award	N/A	MAY 93	MAY 93 (Ch-3)
Preliminary Fit Checks	N/A	JUN 93	JUN 93 (Ch-3)
Eng Dev Test Vehicle Delivery	N/A	FEB 94	FEB 94 (Ch-3)
F-16 Flight Tests	N/A	MAR 94	MAR 94 (Ch-3)
F-15E Flight Tests	N/A	MAY 94	MAY 94 (Ch-3)
Systems Design Review	N/A	JUN 94	JUN 94 (Ch-3)
Milestone II	N/A	APR 95	APR 95 (Ch-3)
EMD Contract Mod	N/A	JUN 95	JUN 95 (Ch-3)
Preliminary Design Review	N/A	OCT 95	OCT 95 (Ch-3)
Critical Design Review	N/A	OCT 96	OCT 96 (Ch-3)
DT&E			
Start	N/A	DEC 95	FEB 96 (Ch-3)
Complete (Report)	N/A	JUL 97	JUL 97 (Ch-3)
Operational Assessment			
Start	N/A	DEC 95	APR 96 (Ch-3)
Complete (Report)	N/A	SEP 96	DEC 96 (Ch-3)

9a. (U) Schedule (Cont'd):
Baseline/BLU-108

(U) Milestones (Cont'd) --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
IOT&E			
Start (Air Force)	N/A	JUN 97	JUN 97(Ch-3)
Start (Navy)	N/A	JUN 98	JUN 98(Ch-3)
Complete (Report)	N/A	MAY 99	MAY 99(Ch-3)
LRIP Contract Option Exercised	N/A	JAN 00	JAN 00(Ch-3)
LRIP First Delivery	N/A	JUL 01	JUL 01(Ch-3)

(b)(1)

Organizational Level Support	N/A	TBD	TBD	(Ch-3)
Intermediate Level Support	N/A	TBD	TBD	(Ch-3)
Depot Level Support	N/A	TBD	TBD	(Ch-3)

b. (U) Previous Change Explanations --

(MSII & ESMD Contract Award) Program experienced a 3 month slip due to administrative delays in reaching a MS II DAB.

(PDR, FCA, FVR, PRR, LRIP option & first delivery, OPEVAL start & complete, O & I level support) A two month schedule delay adjustment based upon Preliminary Design Review (PDR) being held in January 1993. PDR was delayed two months due to administrative delays.

(IOT&E OTILA & TECHEVAL DTIC) Schedule acceleration (start dates from Dec 95 to Oct 95) and complete dates 1 month delay (from Jul 96 to Aug 96) based upon ESMD contract award 26 June 1992.

(b)(1)

(CDR) A four month schedule delay adjustment (from Dec 94 to Apr 95) due to a combination of the month delay based on the PDR, and an additional two month delay due to the ADA software requirement being incorporated into the ESMD contract.

c. (U) Current Change Explanations --

(Ch-1) - Test schedule was adjusted to reflect software delays experienced earlier in the program. Contractor currently meeting software delivery schedule.

(Ch-2) - Reflects actual date of completion.

(Ch-3) - First reporting for this item.

9d. (U) Schedule (Cont'd):
Baseline/BLU-108

d. (U) References --

(U) Development Estimate:
Defense Acquisition Board (DAB), June 5, 1989, and Deputy Secretary of Defense Acquisition Decision Memorandum (ADM), June 29, 1989.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated April 26, 1995.

Unitary

a. (U) Milestones --

	<u>Development Estimate</u>	<u>Approved Program</u>	<u>Current Estimate</u>
Milestone II	APR 95	APR 95	APR 95(Ch-1)
E&MD Contract Award	JUL 95	JUL 95	AUG 95(Ch-1)
Critical Process Review #1	FEB 96	FEB 96	APR 96(Ch-1)
Critical Process Review #2	DEC 98	DEC 98	MAR 99(Ch-1)
Critical Process Review #3	AUG 00	AUG 00	AUG 00(Ch-1)
System Flight Test			
Start	JAN 01	JAN 01	JAN 01(Ch-1)
Complete (Report)	SEP 01	SEP 01	SEP 01(Ch-1)
LRIP Contract Option Exercised	OCT 00	OCT 00	OCT 00(Ch-1)
LRIP First Delivery	APR 02	APR 02	APR 02(Ch-1)
OPEVAL (OT-IIB)			
Start	NOV 01	NOV 01	NOV 01(Ch-1)
Complete (Report)	MAY 02	MAY 02	MAY 02(Ch-1)
Milestone III	SEP 02	SEP 02	SEP 02(Ch-1)
(b)(1)			
Organization Level Support	TBD	TBD	TBD (Ch-1)
Intermediate Level Support	TBD	TBD	TBD (Ch-1)
Depot Level Support	TBD	TBD	TBD (Ch-1)

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) - First reporting for this item.

d. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated April 26, 1995.

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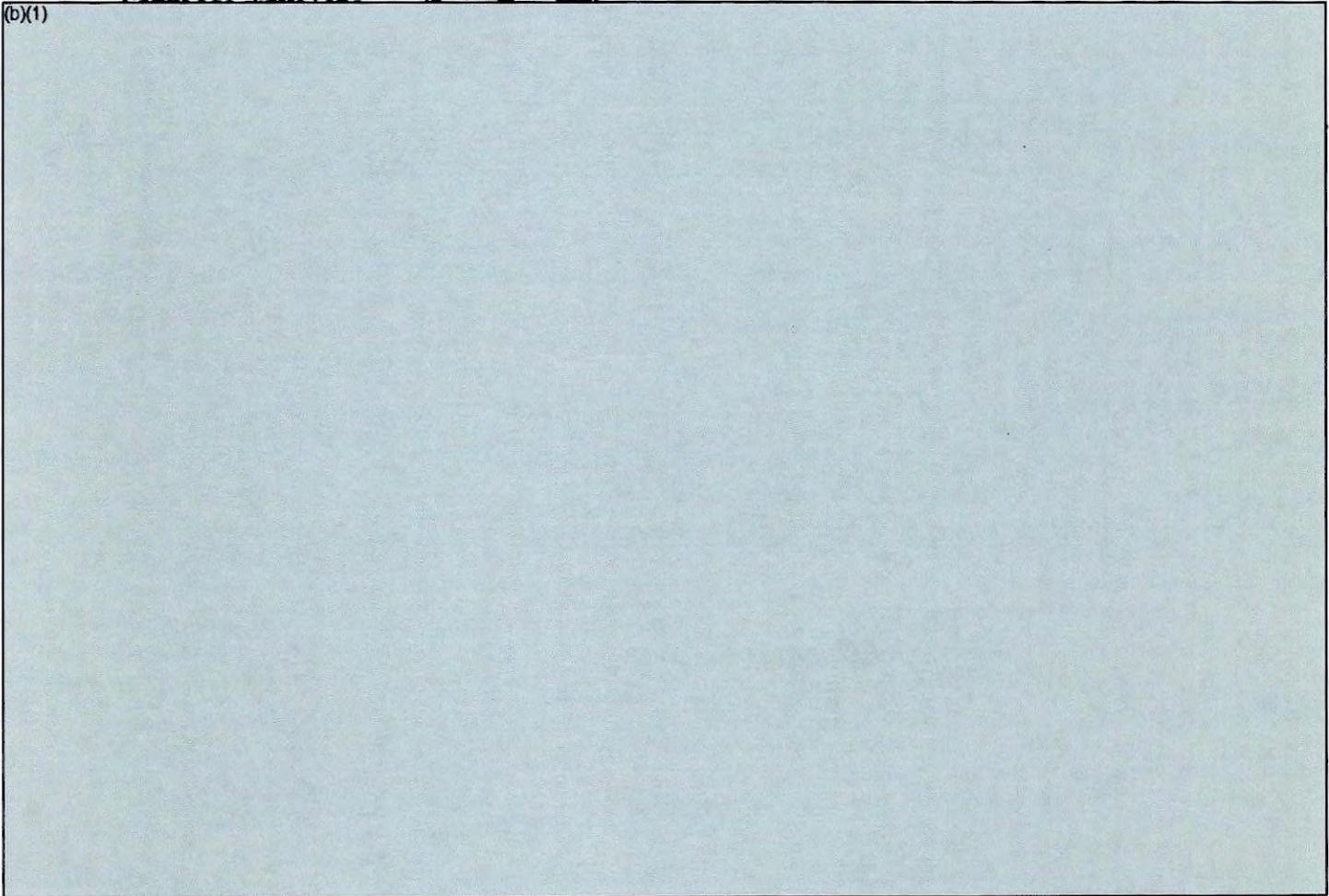
9d. (U) Schedule (Cont'd):
Unitary

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated April 26, 1995.

10. (U) Performance Characteristics:
Baseline/BLU-108

a. (U) Performance --	<u>DE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demon- strated Perf</u>	<u>Current Estimate</u>
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(b)(1)



Accuracy (CEP)

JSOW (AIWS), December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
Baseline/BLU-108

DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)			

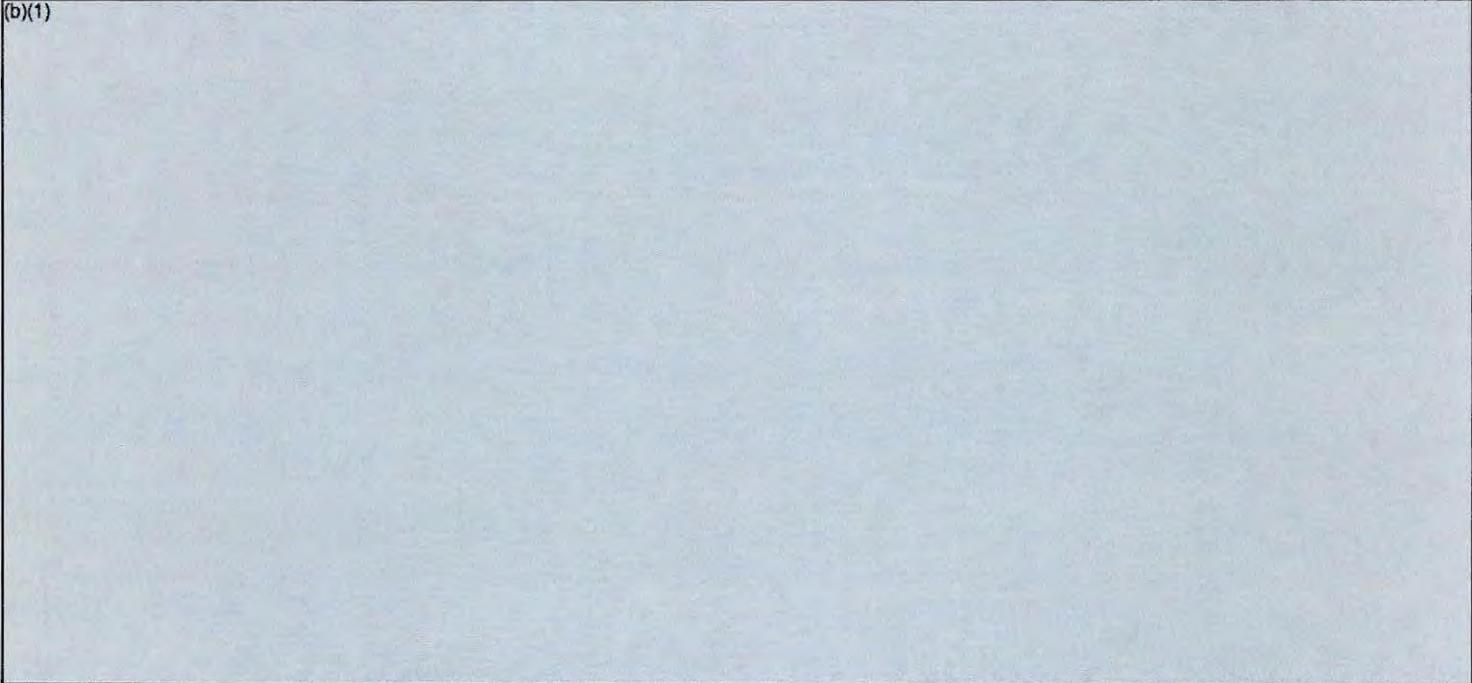
JSOW (AIWS), December 31, 1995

10d. (U) Performance Characteristics (Cont'd):

Unitary

a. (U) Performance --	DE	Approved Program <u>Objective/Threshold</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
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(b)(1)



The APB Survivability should be IAW Sys spec SD-901-1 vice SD-109-1.

b. (U) Previous Change Explanations -- None.

c. (U) Current Change Explanations --

(Ch-1) - First reporting for this item.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated April 26, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 26, 1995.

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11. (U) Total Program Cost and Quantity (Current Dollars in Millions):
Baseline/BLU-108

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	328.3	506.1	556.5
Procurement	1535.7	2963.3	3014.6
Recurring	(1320.2)		(2767.7)
Non-Recurring	(79.6)		(161.6)
Total Flyaway	(1399.8)		(2929.3)
Fleet Support	(92.4)		(56.7)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(43.5)		(28.6)
Construction (MILCON)	21.8	21.8	12.5
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	1885.8	3491.2	3583.6
Escalation	1083.4	2056.1	1475.4
Development (RDT&E)	(44.5)	(83.1)	(80.7)
Procurement	(1032.1)	(1966.2)	(1391.1)
Construction (MILCON)	(6.8)	(6.8)	(3.6)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	2969.2	5547.3	5059.0
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>8800</u>	<u>16000</u>	<u>16000</u>
Total	8800	16000	16000

Excludes 102 RDT&E units which are not considered fully configured.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

Defense Acquisition Board (DAB), June 5, 1989, and Deputy Secretary of Defense Acquisition Decision Memorandum (ADM), June 29, 1989.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 26, 1995.

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11a. (U) Total Program Cost and Quantity (Cont'd):

Unitary

	Development <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	257.2	257.2	259.3
Procurement	3103.7	3103.7	3237.9
Recurring Flyaway	(2825.2)		(2990.3)
Nonrecurring Flyaway	(102.1)		(108.8)
Total Flyaway	(2927.3)		(3099.1)
Fleet Support	(35.5)		(26.3)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(140.9)		(112.5)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 90 Base-Year \$	3360.9	3360.9	3497.2
Escalation	2946.3	2946.3	2008.7
Development (RDT&E)	(79.1)	(79.1)	(65.7)
Procurement	(2867.2)	(2867.2)	(1943.0)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	6307.2	6307.2	5505.9
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>7800</u>	<u>7800</u>	<u>7800</u>
Total	7800	7800	7800

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated April 26, 1995.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated April 26, 1995.

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12. (U) Unit Cost Summary:

Baseline/BLU-108

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (APR 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	3583.6	3491.2	
(2) Quantity	16000	16000	
(3) Unit Cost	0.224	0.218	2.65
b. (U) Procurement			
(1) Cost (BY90\$)	3014.6	2963.3	
(2) Quantity	16000	16000	
(3) Unit Cost	0.188	0.185	1.73

Unitary

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (APR 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY90\$)	3497.2	3360.9	
(2) Quantity	7800	7800	
(3) Unit Cost	0.448	0.431	4.06
b. (U) Procurement			
(1) Cost (BY90\$)	3237.9	3103.7	
(2) Quantity	7800	7800	
(3) Unit Cost	0.415	0.398	4.32

JSOW (AIWS), December 31, 1995

13. (U) Cost Variance Analysis:
Baseline/BLU-108

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	372.8	2567.8	28.6	2969.2
Previous Changes:				
Economic	-4.2	-95.9	-0.5	-100.6
Quantity	-	+678.0	-	+678.0
Schedule	-	-22.4	+0.4	-22.0
Engineering	-	-	-	-
Estimating	+49.3	-138.2	-12.4	-101.3
Other	-	-	-	-
Support	-	-79.6	-	-79.6
Subtotal	+45.1	+341.9	-12.5	+374.5
Current Changes:				
Economic	-4.2	-220.4	-0.7	-225.3
Quantity	-	887.2	-	+887.2
Schedule	-	-97.2	-	-97.2
Engineering	-	-	-	-
Estimating	223.5	940.9	0.7	+1165.1
Other	-	-	-	-
Support	-	-14.5	-	-14.5
Subtotal	+219.3	+1496.0	-	+1715.3
Total Changes	+264.4	+1837.9	-12.5	+2089.8
Current Estimate	637.2	4405.7	16.1	5059.0

JSOW (AIWS), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Baseline/BLU-108

a. (U) Summary (FY 1990 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	328.3	1535.7	21.8	1885.8
Previous Changes:				
Quantity	-	+408.5	-	+408.5
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+40.5	-84.5	-9.9	-53.9
Other	-	-	-	-
Support	-	-41.2	-	-41.2
Subtotal	+40.5	+282.8	-9.9	+313.4
Current Changes:				
Quantity	-	555.6	-	+555.6
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	187.7	649.9	0.6	+838.2
Other	-	-	-	-
Support	-	-9.4	-	-9.4
Subtotal	+187.7	+1196.1	+0.6	+1384.4
Total Changes	+228.2	+1478.9	-9.3	+1697.8
Current Estimate	556.5	3014.6	12.5	3583.6

b. (U) Previous Change Explanations --

RDT&E

Economic: Adjustment of escalation indices.
 Schedule: Extension of 18 to 25 months DEMVAL; systems engineering and program management required as a result of the extended program schedule.
 Estimating: Additional A/C integration requirements; risk reduction in E&MD; DAB decision on prototyping in DEMVAL; test assets requirement increased from 65 to 102 units. Engineering support efforts rephased due to budgetary reductions in early stage of program. Adjustments for contract FPRA rates, and field technical and testing support. Increase in

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13b. (U) Cost Variance Analysis (Cont'd):

Baseline/BLU-108

estimate for contract overhead adjustments and realignment for annual fund increments.

Adjustment for current and prior inflation.

Procurement

Economic: Revised escalation indices.
Economic adjustment for negative program change.

Quantity: Addition of 3,000 Air Force Baseline units.

Schedule: Delivery schedule slip. Decreased costs for annual procurement buy acceleration.

Estimating: Refinement of prior estimate. Decrease telemetry quantity and system unit price for addition of J5OW BLU-108. Addition of nonrecurring costs for the 3,000 Air Force units, increase in nonrecurring costs for additional AUR containers.

Support: Attributable to hardware delivery schedule. Decrease estimate for initial spares. Increase requirements for Fleet support. Decreased support requirements resulting from schedule acceleration and refinement of estimate.

MILCON

Economic: Revised escalation indices.
Economic adjustment for negative program change.

Estimating: Deletion of All Up Round (AUR) maintenance/test facility requirements.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices (Economic)	N/A	-4.2
Addition of Navy and Air Force BLU-108 Variant (Estimating)	+187.7	+223.5
RDT&E Subtotal	<u>+187.7</u>	<u>+219.3</u>
(2) <u>Procurement</u>		
Revised escalation indices (Economic)	N/A	-220.4
Addition of Navy and Air Force BLU-108 variant (Quantity)	+555.6	+887.2

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13c. (U) Cost Variance Analysis (Cont'd):
Baseline/BLU-108

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised procurement buy profile as a result of adding BLU-108 variant quantities. (Schedule)	--	-97.2
Updated materials costs based on E&MD actuals and additional BLU-108 variant reflecting more sophisticated and expensive payload (Estimating)	+649.9	+940.9
Revised maintenance philosophy transferring maintenance responsibility from government to contractor (Support)	-9.4	-14.5
Procurement Subtotal	<u>+1196.1</u>	<u>+1496.0</u>
(3) MILCON		
Revised escalation indices (Economic)	N/A	-0.7
Revised estimate to offset economic adjustment (Estimating)	+0.6	+0.7
MILCON Subtotal	<u>+0.6</u>	<u>--</u>

JSOW (AIWS), December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Unitary

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	336.3	5970.9	0.0	6307.2
Previous Changes:				
Economic	-	-	-	-
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	-	-	-
Other	-	-	-	-
Support	-	-	-	-
Subtotal	-	-	-	-
Current Changes:				
Economic	-14.2	-706.1	-	-720.3
Quantity	-	-	-	-
Schedule	-	-274.6	-	-274.6
Engineering	-	-	-	-
Estimating	2.9	277.0	-	+279.9
Other	-	-	-	-
Support	-	-86.3	-	-86.3
Subtotal	-11.3	-790.0	-	-801.3
Total Changes	-11.3	-790.0	-	-801.3
Current Estimate	325.0	5180.9	-	5505.9

JSOW (AIWS), December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):

Unitary

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adj for curr and prior inflation (Estimating)	+0.8	+0.9
Revised estimating techniques (Estimating)	+1.3	+2.0
RDT&E Subtotal	<u>+2.1</u>	<u>-11.3</u>
(2) Procurement		
Revised escalation indices (Economic)	N/A	-706.1
Revised annual funding profile to begin procurement two years earlier. (Schedule)	--	-274.6
Revised to reflect updated materials costs and EMD actuals. (Estimating)	+171.8	+277.0
Refined support estimate (Support)	-37.6	-86.3
Procurement Subtotal	<u>+134.2</u>	<u>-790.0</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Baseline/BLU-108

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.337	-0.020	-0.054	-0.007	--	0.066	--	-0.006	-0.021	0.316

Unitary

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
0.809	-0.092	-0.001	-0.035	--	0.036	--	-0.011	-0.103	0.706

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15. (U) Contract Information (Then-Year Dollars in Millions):

a.(U) RDT&E --			Initial Contract Price		
(U) <u>JSOW Baseline/BLU108 EMD:</u>			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
TEXAS INSTRUMENTS, Dallas, TX					
N00019-91-C-0196, CPIF			\$202.5	\$0.0	0
Award: June 26, 1992					
Definitized: June 26, 1992					
Current Contract Price			Estimated Price At Completion		
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>	
\$330.7	\$0.0	0	\$333.0	\$333.0	
			<u>Cost Variance</u>	<u>Schedule Variance</u>	
Previous Cumulative Variances			\$-23.4	\$-5.2	
Cumulative Variances To Date (12/31/95)			\$-23.1	\$-3.9	
Net Change			\$0.3	\$1.3	

Explanation of Change:

The positive net change in cost reflects improvements in non-received material milestones credited since the last SAR. The positive net change in schedule is a direct result of the incorporation of the BLU-108 variant into the reporting system and the replanning of future work efforts.

Cost Variance: Reflects heavy flight test support and related impacts of the DT-IIB testing, recurring engineering overruns due to protracted development efforts, negotiated material price variances on the BLU-97 submunitions and final receipt for the Choctaw Mentor/Protege container efforts.

Schedule Variance: Reflects start-up delays in the build of the BLU 108 items associated with DT&E test equipment and the continual fluctuations in the hardware build and software development plans.

There is no impact to the contract or JSOW program for these variances.

(U) <u>JSOW UNITARY EMD:</u>			Initial Contract Price		
TEXAS INSTRUMENTS, Dallas, TX			<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
N00019-95-C-0120, CPIF/AF			\$211.5	N/A	0
Award: August 30, 1995					
Definitized: August 30, 1995					

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$221.8	N/A	0	\$211.9	\$221.0
			<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances			\$0.0	\$0.0
Cumulative Variances To Date (12/31/95)			\$0.2	\$-0.4
Net Change			\$0.2	\$-0.4

Explanation of Change:

Cost Variance: Reflects early completion of scheduled tasks relating to systems engineering.

Schedule Variance: Reflects slip in award and subsequent material delivery of several subcontracts.

There is no impact to the contract of JSOW program for these variances.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 35.7% (10 yrs/28 yrs)
- (2) Percent Program Cost Appropriated: 5.6% (\$594.8 / \$10564.9)

Baseline/BLU-108

- (1) Percent Program Completed: 38.5% (10 yrs/26 yrs)
- (2) Percent Program Cost Appropriated: 10.8% (\$546.6 / \$5059.0)

Unitary

- (1) Percent Program Completed: 21.7% (5 yrs/23 yrs)
- (2) Percent Program Cost Appropriated: 0.9% (\$48.2 / \$5505.9)

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16b. (U) Program Funding Summary (Cont'd):
 Total Program

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program Appropriation	Prior Years (FY87-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2014)	Total
RDT&E	447.0	122.3	110.4	282.5	962.2
Procurement	-	25.5	64.4	9496.7	9586.6
MILCON	-	-	3.0	13.1	16.1
O&M	-	-	-	-	-
Total	447.0	147.8	177.8	9792.3	10564.9

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Baseline/BLU-108 Appropriation	Prior Years (FY87-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2012)	Total
RDT&E	427.8	93.3	65.8	50.3	637.2
Procurement	-	25.5	64.4	4315.8	4405.7
MILCON	-	-	3.0	13.1	16.1
O&M	-	-	-	-	-
Total	427.8	118.8	133.2	4379.2	5059.0

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16b. (U) Program Funding Summary (Cont'd):
Unitary

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Unitary Appropriation	Prior Years (FY92-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2014)	Total
RDT&E	19.2	29.0	44.6	232.2	325.0
Procurement	-	-	-	5180.9	5180.9
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	19.2	29.0	44.6	5413.1	5505.9

c. (U) Annual Summary -- Baseline/BLU-108

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Obliga- ted	Ex- pended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1987				1.1	1.0	1.0	1.0	2.7
1988				20.3	19.2	19.2	18.1	3.0
1989				13.7	13.5	13.0	13.0	4.2
1990				8.4	8.6	8.5	8.4	4.0
1991				15.6	16.5	16.5	16.1	4.3
1992				42.0	45.8	45.5	45.5	2.8
1993				52.6	58.7	58.7	58.7	2.7
1994				71.1	80.9	78.3	73.0	2.0

JSOW (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Baseline/BLU-108

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1995				89.8	104.2	104.0	104.0	1.9
1996				42.4	50.3	38.0		2.0
1997				34.4	41.7			2.2
1998				5.8	7.2			2.2
1999				5.4	6.8			2.2
Subtot				402.6	454.4	382.7	337.8	

Excludes 152 RDT&E units which are not considered fully configured.

Appropriation: 1507 Weapons Procurement, Navy

1996		21.0		21.0	25.5			2.0
1997	100	1.0	50.2	51.9	64.4			2.2
1998	186	8.7	63.5	74.2	94.2			2.2
1999	525	11.9	109.1	128.3	166.4			2.3
2000	747	5.5	160.3	170.3	225.8			2.2
2001	648	8.5	141.6	157.4	213.3			2.2
2002	1025	20.2	198.3	223.6	309.6			2.2
2003	909	7.7	155.1	167.9	237.6			2.2
2004	675	4.2	92.0	100.0	144.6			2.2

JSOW (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Baseline/BLU-108

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

2005	675	4.2	89.9	97.8	144.6			2.2
2006	675	4.1	88.2	96.0	145.1			2.2
2007	675	4.1	86.8	94.6	146.1			2.2
2008	675	4.0	85.6	93.4	147.3			2.2
2009	675	4.0	84.1	91.8	148.0			2.2
2010	675	4.0	82.6	90.3	148.8			2.2
2011	675	3.9	81.4	89.1	150.0			2.2
2012	460	2.7	56.5	62.9	108.2			2.2
Subtot	10000	119.7	1625.2	1810.5	2619.5			

Appropriation: 1205 Military Construction, Navy

1997				2.4	3.0			2.2
1998								2.2
1999				10.1	13.1			2.3
Subtot				12.5	16.1			
Navy	10000	119.7	1625.2	2225.6	3090.0	382.7	337.8	

JSOW (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Baseline/BLU-108

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$		Escl Rate (%)
		Nonrec	Rec		Obligated	Expended	

Appropriation: 3600 Research, Development, Test + Eval, AF

1993				4.8	5.4		2.7
1994				20.3	23.1		2.0
1995				43.8	50.9		1.9
1996				36.3	43.0		2.0
1997				19.9	24.1		2.2
1998				13.5	16.7		2.2
1999				8.7	11.0		2.2
2000				6.6	8.6		2.2
Subtot				153.9	182.8		

Appropriation: 3020 Missile Procurement, Air Force

1998	22	0.2	6.1	6.5	8.2		2.2
1999	92	0.8	21.1	22.0	28.6		2.3
2000	160	1.9	34.3	36.7	48.6		2.2
2001	241	1.8	48.1	50.9	68.9		2.2
2002	500	5.0	99.5	106.4	147.4		2.2
2003	600	5.7	118.9	127.2	180.0		2.2
2004	717	4.5	143.5	151.5	219.1		2.2

J50W (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Baseline/BLU-108

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3020 Missile Procurement, Air Force (Cont'd)

2005	717	4.4	140.0	147.8	218.5			2.2
2006	717	4.3	137.4	145.1	219.2			2.2
2007	717	4.3	135.5	143.0	220.8			2.2
2008	717	4.3	133.8	138.0	217.8			2.2
2009	540	3.2	94.0	97.2	156.7			2.2
2010	260	1.5	30.3	31.8	52.4			2.2
Subtot	6000	41.9	1142.5	1204.1	1786.2			
USAF	6000	41.9	1142.5	1358.0	1969.0			
Grand Total	16000	161.6	2767.7	3583.6	5059.0	382.7	337.8	

c. (U) Annual Summary -- Unitary

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1992				1.7	1.9	1.9	1.9	2.8
1993				4.1	4.6	4.6	4.6	2.7

JSOW (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Unitary

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1994				2.1	2.4	2.4	2.4	2.0
1995				8.9	10.3	10.3	10.3	1.9
1996				24.5	29.0	27.2	5.5	2.0
1997				36.8	44.6			2.2
1998				43.8	54.2			2.2
1999				54.8	69.4			2.3
2000				40.6	52.6			2.2
2001				26.2	34.7			2.2
2002				15.8	21.3			2.2
Subtot				259.3	325.0	46.4	24.7	

Excludes 50 which are not considered fully configured.

Appropriation: 1507 Weapons Procurement, Navy

1998		1.1		1.1	1.4			2.2
1999	21	5.3	18.6	27.8	36.0			2.3
2000	51	21.8	34.4	62.0	82.2			2.2
2001	328	2.3	188.0	202.0	273.7			2.2
2002	350	2.3	170.0	179.7	248.8			2.2

JSOW (AIWS), December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

Unitary

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1507 Weapons Procurement, Navy (Cont'd)

2003	350	2.2	152.6	161.7	228.8			2.2
2004	350	2.2	144.0	152.8	221.0			2.2
2005	350	2.2	139.7	148.3	219.2			2.2
2006	350	2.1	137.3	145.8	220.2			2.2
2007	350	2.1	135.3	143.7	221.9			2.2
2008	350	2.1	133.7	142.0	224.0			2.2
2009	450	22.2	168.0	197.8	318.9			2.2
2010	650	12.0	235.5	257.5	424.4			2.2
2011	900	11.3	316.6	340.9	574.1			2.2
2012	1100	6.4	378.1	399.7	688.0			2.2
2013	1100	6.6	376.8	398.5	701.0			2.2
2014	750	4.6	261.7	276.6	497.3			2.2
Subtot	7800	108.8	2990.3	3237.9	5180.9			
Grand Total	7800	108.8	2990.3	3497.2	5505.9	46.4	24.7	

JSOW (AIWS), December 31, 1995

17. (U) Production Rate Data:

- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.
- a. (U) Deliveries to Date -- 0/0.
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:

Baseline/BLU-108

- a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated 25 January 1995.

ASSUMPTIONS:

There is no antecedent system.
 No additional operational/maintenance personnel at O-Level.
 10 JSOW expenditures per year.
 Deployed aboard 10 CVBG each year - 100 JSOW per CV.

- b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unit	Avg Annual Cost Per ANTECEDENT
Mission Personnel	2.1	N/A
Unit Consumption	0.5	N/A
Depot-AUR Maintenance	0.3	N/A
Depot-COMP RPR	0.0	N/A
Sustaining Support	0.2	N/A
Total	3.1	N/A

Data reflects Operation and Support requirements analysis dated 25 January 1995.

- c. (U) Contractor Support Costs -- None.

JSOW (AIWS), December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

Unitary

a. (U) Assumptions and Ground Rules --

SOURCE: Operations and Support requirements analysis dated January 25, 1995.

ASSUMPTIONS:

There is no antecedent system.

Unitary will be integrated with the established Baseline program.

10 Unitary expenditures per year.

Deployed aboard 10 CVBG each year, 50 JSOW Unitarys per CV.

Twenty year missile operating life.

No Depot component repair program.

b. (U) Costs -- (FY 1995 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per JSOW Unitary	Avg Annual Cost Per Antecedent
Unit Consumption	0.3	N/A
Depot AUR Maintenance	0.1	N/A
Sustaining Support	0.2	N/A
Total	0.6	N/A

c. (U) Contractor Support Costs -- None.

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6. Mission and Description (Cont'd):

signature equipment, diesel engines, and cycloidal propulsion. Major payload equipments include the AN/SYG-13 Navigation, Command, and Control System, AN/SQQ-32 Advanced Minehunting Sonar, and a AN/SLO-48 Mine Neutralization System. The MHC class serves as the "low-mix" complement to the larger and deeper water capable Mine Countermeasures (MCM) ship. The MHC class will enable battle group and amphibious operations in harbors, coastal waters, and littoral areas worldwide by clearing acoustic, magnetic, pressure and contact mines from the bottom and surrounding water volume. The MHC can operate in coordinated mission scenarios with both Airborne Mine Countermeasures (AMCM) helicopters and MCM ships.

7. Program Highlights:

a. Significant Historical Developments --

During May 1982, an Operational Requirement (OR) was issued for a "low mix" (smaller mission/shallower water) littoral area minehunter ship to complement the larger ocean going MCM ship. This effort led to the Minesweeper Hunter (MSH-1) class design which used Swedish based "foam core" ship construction technology. Major problems were encountered very early when preliminary strength and shock testing on foam core sectional test panels indicated that major weight and shock problems would materialize and that costly redesign would be necessitated. In view of this, contract effort was terminated in 1986. The Coastal Minehunter (MHC) ship program was initiated to replace the MSH. The MHC design is based on the LERICI Class minesweeper ships designed and built by Italian shipbuilder Intermarine S.p.A. (IMSpA). IMSpA was awarded a contract to modify the LERICI design to meet U.S. Navy mission requirements. Milestone I (Authorization for Contract Design) was approved in June 1986. An MHC Program Endorsement Memo (PEM) for Milestone II (leadship production authorization) was issued by the Ass't Secretary of the Navy, Shipbuilding and Logistics (ASN/S&L) 11 December 1986. The PEM authorized sole source award of the class leadship contract, MHC 51, to Savannah, GA based Intermarine USA (IMUSA). The PEM further directed that a second source shipbuilder be competitively selected. The MHC 51 contract was awarded to IMUSA 5/22/87 and construction began in May 1988. Milestone IIIA (authorization for limited production) was approved by ASN(S&L) during February 1989. The "second source" builder, Avondale Industries, Inc. of New Orleans, LA, was awarded a contract for construction of their first vessel, MHC 53, on 3 October 1989. Milestone IIIB (full rate production) approval was authorized in January 1990. The MHC program force level procurement authorization is 12 ships.

b. Significant Developments Since Last Report --

PROGRAM DELIVERIES: IMUSA's third and fourth ships, MHCs 55 and 58, were respectively delivered 5/12/95 and 1/16/96. The second source

MHC 51, December 31, 1995

7b. Program Highlights (Cont'd):

builder, Avondale Industries, delivered their first ship, MHC 53, 8/11/95 and their second ship, MHC 54, 2/9/96. As of 2/29/96, six ships, half the MHC program authorization, have been delivered.

IMUSA CORPORATE STATUS: As noted in prior SAR submissions, IMUSA experienced extreme losses on their first two ship contracts (MHC 51 and 52). With little entitlement found on most of their claims and no guarantees that sufficient awards would be forthcoming on any of their four U.S. Court of Federal Claims filed lawsuits, the company faced potential bankruptcy during late 1994 and throughout most of 1995. This situation jeopardized delivery of the company's five remaining ships under contract (MHCs 58-62).

With a 12 MHC ship force requirement confirmed, Navy and OSD concern was directed toward developing a means to equitably, legally, and collectively resolve all issues with IMUSA under one agreement. An approach was developed in which a variety of existent issues could be negotiated under one "global settlement." On 4/10/95, IMUSA and the Navy signed a "Scope of Settlement Agreement" which formally defined terms and established pricing for resolution of all pertinent issues set forth in the global settlement proposal. The following main points were covered: Grant Navy full life cycle rights to use IMUSA proprietary Glass Reinforced Plastic (GRP) data and processes; Convert contracts for the last five ships from Fixed Price Incentive (FPI) to Firm Fixed Price (FFP); IMUSA to provide full and final release of all open claims and Requests for Equitable Adjustments (REAs); IMUSA to dismiss four claims (lawsuits) which were pending at the U.S. Court of Federal Claims; IMUSA acknowledges responsibility for all directed source contractor furnished equipment; Placement of a cap on IMUSA's liability for correction of shock related defects; Establish delivery incentives (maximum of \$3.0M per ship) for the last five ships under contract; and, IMUSA to provide full and final release for all events that were known or should have been known at the time the scope of settlement was signed (4/10/95).

Contract modifications invoking agreement terms were signed 12/6/95. During the year leading to the settlement, both IMUSA and the Navy demonstrated good faith effort in assuring that the production effort was maintained despite no guarantees that funding would become available. IMUSA's production pace has improved markedly and their four remaining ships under contract are expected to be delivered within global settlement contract cost and schedule parameters.

AVONDALE STATUS: In November 94, Avondale submitted an REA for \$59.7M—the primary basis of which cited impossibility to meet Government's design specifications due to ship space constraints.

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7b. Program Highlights (Cont'd):

Settlement was reached for \$28.9M and contract modifications were signed 12/28/95. During the past year, Avondale has demonstrated favorable production progress improvement trends. The company is on track toward meeting PM delivery estimates for their two final MHC ships under contract.

MHC CLASS SHOCK TRIALS: MHC 51 shock trials were conducted at Aberdeen Proving Grounds in Maryland from 8/22/95 to 9/25/95. The trials entailed 5 successively stronger underwater "shots" which were conducted on the class leadship, MHC 51. The trials successfully demonstrated the objective of evaluating the ship's mission response to underwater explosion induced shock. Shock trial damage repair began during January 96. Comprehensive study of any necessary vessel or equipment system design changes resulting from shock trials will continue through mid-year 1996.

The MHC will satisfy mission requirements.

c. Changes Since As Of Date —
 IMUSA's fourth ship, MHC 58, delivered 1/16/96. Avondale's second ship, MHC 54, delivered 2/9/96. Funding for IMUSA global settlement and Avondale REA coverage was formally allocated to respective contracts in late January/early February 1996.

8. Threshold Breaches:
 There are no breaches to the approved acquisition program baseline dated October 20, 1995.

There are no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones —	Production Estimate	Approved Program	Current Estimate
Milestone I	JUN 86	JUN 86	JUN 86
Milestone II	DEC 86	DEC 86	DEC 86
MHC 51 (Leadship) Award	MAY 87	MAY 87	MAY 87
Milestone IIIA	FEB 89	FEB 89	FEB 89
MHC53, 1st ship to 2nd yard	OCT 89	OCT 89	OCT 89
Milestone IIIB	JAN 90	JAN 90	JAN 90
Launch MHC 51 Leadship	MAR 91	MAR 91	MAR 91
MHC 51 Acceptance Trial	NOV 92	JUL 93	JUL 93
MHC 51 Delivery	DEC 92	AUG 93	AUG 93

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9a. Schedule (Cont'd):

Milestones (Cont'd) --	Production Estimate	Approved Program	Current Estimate
MHC 53 Delivery	MAR 94	MAR 95	AUG 95(Ch-1)

Milestone I: ASN(S&L) contract design authorization.

Milestone II: ASN(S&L) Program Endorsement Memo authorizing lead ship production.

Milestone IIIA: ASN(S&L) authorization for award of FY 89 ships.

Milestone IIIB: ASN(S&L) authorization for award of FY 90 ships and out.

b. Previous Change Explanations --

MHC 51 Acceptance Trials (AT) and Delivery: Based on continued lag in MHC 51 (program leadship) production, testing, and ILS progress, MHC 51 AT and Delivery milestones were respectively revised from 11/92 to 5/93 and 12/92 to 6/93. MHC 51 was delivered 5/12/93.

MHC 53 Delivery: As a result of continued and extensive design, production, and integrated systems testing problems on Avondale's lead production ship, the delivery estimate was revised from March 94 to July 95.

c. Current Change Explanations --

(Ch-1) MHC 53 delivery estimate from prior SAR reported July 95; actual delivery occurred in August 95.

d. References --

Production Estimate:

NAE approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:

NAE Approved Acquisition Program Baseline dated October 20, 1995.

10. Performance Characteristics:

a. Performance —	PdE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate	
Operating Crew (Auth)	51	51	/ 57	51	51	
Beam (meters)	11.0	11.0	/ 11.0	11.0	11.0	
Draft (Nav) (meters)	2.8	3.68	/ 3.86	3.69	3.69	(Ch-1)
Length (meters)	57.2	57.2	/ 57.2	57.2	57.2	
Full Load Disp (metric tons)	918	918	/ 964	955	955	(Ch-1)
Speed (knots)	10.0	10.0	/ 10.0	10.0	10.0	
Endurance (NM @ 10 kts) (@ 80% power)	1500.0	1500.0	/ 1500.0	1500	1500	
Propulsion						
Diesels (cyl)	2/8	2/8	/ 2/8	2/8	2/8	
Shafts	2	2	/ 2	2	2	
Horsepower @ (RPM)	1600 @ 1800	1600 @ 1800	/ 1600 @ 1800	1600 @ 1800	1600 @ 1800	

"Draft (Nav)" represents Full Load Navigational Departure Draft.

b. Previous Change Explanations —

An erroneously stated threshold for MHC "Draft" of 2.8 meters was corrected to 3.68 meters through a Program Deviation Request (PDR) approved by the NAE in 7/93. The change was an administrative correction and had no adverse cost, schedule, or performance impact to the program.

Refinement of full load displacement (metric tons) from prior estimate of 918 to 914 based on MHC 51 (lead ship) inclining experiment.

c. Current Change Explanations —

(Ch-1) Draft and Full Load Displacement: Using Avondale Industries lead ship (MHC 54) inclining experiment of January 1996 as a "worst case" estimate for the ship class, the following changes to current estimate are: "Draft" (represented as full load navigational departure draft) revised from 3.68 meters to 3.69 meters; and, "Full Load Displacement," revised from 914 metric tons to 955 metric tons.

d. References —

Production Estimate:
NAE approved Acquisition Program Baseline dated March 11, 1992.

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10d. Performance Characteristics (Cont'd):

Approved Program:
NAE Approved Acquisition Program Baseline dated October 20, 1995.

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost —	Production Estimate	Approved Program	Current Estimate
Development (RDT&E)	17.2	17.2	18.5
Procurement	1440.2	1626.9	1611.0
Basic	(966.4)		(1124.2)
Government Furnished Equipment	(346.9)		(365.2)
Other	(31.9)		(51.1)
Outfitting/Post Delivery	(80.1)		(55.9)
Total Sailway	(1425.3)		(1596.4)
Feculiar Support	(0.0)		(0.0)
Initial Spares	(14.9)		(14.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (OSM)	0.0	0.0	0.0
Total FY 92 Base-Year \$	1457.4	1644.1	1629.5
Escalation	90.9	85.6	84.2
Development (RDT&E)	(-2.2)	(-2.2)	(-2.3)
Procurement	(93.1)	(87.8)	(86.5)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (OSM)	(0.0)	(0.0)	(0.0)
Total Then-Year \$	1548.3	1729.7	1713.7
b. Quantity —			
Development (RDT&E)	0	0	0
Procurement	12	12	12
Total	12	12	12

c. Foreign Military Sales/International Cooperative Programs — None

d. Nuclear Costs — N/A

e. References —

Production Estimate:
NAE Approved Acquisition Program Baseline dated March 11, 1992.

Approved Program:
NAE Approved Acquisition Program Baseline dated October 20, 1995.

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12. Unit Cost Summary:

	Current Estimate (DEC 95 SAR)	UCR Baseline (OCT 95 APB)	Percent Change
a. Total Program			
(1) Cost (BY92\$)	1629.5	1644.1	
(2) Quantity	12	12	
(3) Unit Cost	135.79	137.01	-0.89
b. Procurement			
(1) Cost (BY92\$)	1611.0	1626.9	
(2) Quantity	12	12	
(3) Unit Cost	134.25	135.58	-0.98

All categories of cost include outfitting and post delivery.

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	ROT&E	PROC	MILCON	TOTAL
Production Estimate	15.0	1533.3	0.0	1548.3
Previous Changes:				
Economic	-	-0.1	-	-0.1
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.2	+1.5	-	+2.7
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	+1.2	+1.6	-	+2.8
Current Changes:				
Economic	-	0.7	-	+0.7
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	162.4	-	+162.4
Other	-	-	-	-
Support	-	-0.5	-	-0.5
Subtotal	-	+162.6	-	+162.6
Total Changes	+1.2	+164.2	-	+165.4
Current Estimate	16.2	1697.5	-	1713.7

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1992 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Production Estimate	17.2	1440.2	0.0	1457.4
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	+1.3	+8.5	-	+9.8
Other	-	-	-	-
Support	-	+0.2	-	+0.2
Subtotal	+1.3	+8.7	-	+10.0
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-	162.6	-	+162.6
Other	-	-	-	-
Support	-	-0.5	-	-0.5
Subtotal	-	+162.1	-	+162.1
Total Changes	+1.3	+170.8	-	+172.1
Current Estimate	18.5	1611.0	-	1629.5

b. Previous Change Explanations —

RDT&E

Estimating: Award of RDT&E,N based shipbuilder claims.

Procurement

Economic: Net cumulative effect of revised OSD inflation indices.

Estimating: For 12/92 SAR, net changes based on FY 92 contract award savings, reduction of funding to ceiling for FY 93 program year ships, and reduction in outfitting and post delivery requirements. For 12/93 SAR, net increase for contract claims coverage, small increase in GFE and outfitting and post delivery estimates. For 12/94 SAR, net

13b. Cost Variance Analysis (Cont'd):

program increases for: basic contract growth (low value claim/REA settlement, change order reserve, expanded shock trial requirements, and outfitting and post delivery estimates.

Support: Adjustment/correction of \$0.2M for prior year inflation.

c. Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) Procurement		
Revised OSD inflation indices. (Economic)		+0.7
Funding (TY) for IMUSA global settlement (\$135M), Avondale REA (\$30M), IORAL Co. REA (\$6M), and economic adjustment. (Estimating)	+167.0	+170.3
Increase mainly based on: added On-Board Repair Parts (OBRP) procurement and, funding for procurement of MHC machinery control console equipment for life cycle software support management effort. (Estimating)	+9.9	+10.2
Increases primarily resulting from higher GFE categorized shock trial estimates in addition to small increases in SQQ-32 Sonar procurement costs. (Estimating)	+3.5	+3.9
Refinement of cost estimates for conduct of Post Shakedown Availability (PSA) work. (Estimating)	+1.4	+1.6
Decrease in ships' outfitting and post delivery funding estimates. (Estimating)	-19.7	-24.1
Adjustment to align Flyaway and Support costs. (Estimating)	+0.5	+0.5
Adjustment to align Flyaway and Support costs. (Support)	-0.5	-0.5
Procurement Subtotal	+162.1	+162.6

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14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
129.025	0.050	--	--	--	13.758	--	-0.025	13.783	142.808

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --
MHC 56/57 (OPTION):
AVONDALE INDUSTRIES, NEW ORLEANS, LA
N00024-90-C-2304, FPI
Award: March 29, 1991
Definitized: March 29, 1991

Initial Contract Price
Target Ceiling Qty
\$111.0 \$115.3 2

Current Contract Price
Target Ceiling Qty
\$113.6 \$118.0 2

Estimated Price At Completion
Contractor Program Manager
\$118.0 \$118.0

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-0.5	\$0.5
Cumulative Variances To Date (11/30/95)	\$-5.4	\$-4.2
Net Change	\$-4.9	\$-4.7

Explanation of Change:

\$M/Contract Base Year Dollars

MHC 56/57 CONTRACT COVERAGE:

MHCs 56 and 57 are Avondale's final two, of four, MHC ships. The prior year SAR reported cost variance of \$-0.5M declined moderately to \$-5.4M (-5.1% variance to total budget). Further significant negative cost variance increase is not expected. Avondale's Estimate At Completion (EAC) cost is \$119.5M—a \$4.5M increase over last year's \$115.0M estimate (\$1.1M of the \$4.5M increase is negotiated changes). The PM's current cost EAC of \$123.0M represents a \$5.7M increase over last year's \$117.3M. The current EAC equates to a \$4.9M loss relative to 12/31/95 contract values. However, a portion of an Avondale REA recently negotiated for \$28.9M (total for all four MHCs at Avondale) results in formal repricing which will render a currently estimated \$1.7M profit on this contract. (At time of SAR

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15. Contract Information (Cont'd):

preparation, the REA values were not yet included in an established Contract Cost Performance Report (CPR) baseline). During the past year, Avondale has demonstrated marked improvement in their monthly production progress rates. The company continues to maintain a production pace which is expected to enable MHC 56 and 57 to meet respective PM delivery estimates of 8/96 and 1/97. The prior year SAR estimates were 7/96 and 1/97.

NOTE: The prior (December 1994) MHC SAR submission included contract coverage for Avondale's first two production ships, MHCs 53 and 54. MHC 53 delivered during August 95 and MHC 54 delivered February 96. With the ships delivered, these contracts are no longer reported in the SAR.

MHC 58, 59, & 60:			Initial Contract Price		
INTERMARINE USA, SAVANNAH, GA			Target	Ceiling	Qty
N00024-92-C-2203, FPI/FFP			\$178.0	\$199.6	3
Award: April 22, 1992					
Definitized: April 22, 1992					
Current Contract Price			Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager	
\$229.5	N/A	3	\$229.5	\$229.5	
Previous Cumulative Variances			Cost Variance	Schedule Variance	
Cumulative Variances To Date (11/30/95)			\$-16.3	\$-16.9	
Net Change			\$-16.2	\$-7.9	
			\$0.1	\$9.0	

Explanation of Change:

MHC 58-60 CONTRACT COVERAGE: IMUSA was awarded 8 of the program's 12 authorized ships. The MHC 58, 59, and 60 contract buys IMUSA's respective 4th, 5th, and 6th production ships. Prior SAR submissions have described extreme cost overruns and consequential losses on the company's first two contracts, MHCs 51 and 52. Losses were such that bankruptcy was threatened and delivery of remaining ships was in doubt. After CNO confirmed a mission need for a 12 ship MHC program, a strategy was developed to define and equitably resolve several major issues between the Navy and IMUSA. Subsequent effort was directed at collectively negotiating resolution to these issues under a single "global" settlement.

One of several global settlement terms involved conversion of the MHC 58-60 basic contract (and MHC 61/62 option) from a Fixed Price Incentive (FPI) to a Firm Fixed Price (FFP) type contract. The contract pricing data above shows current FFP values. Since these

MHC 51, December 31, 1995

15. Contract Information (Cont'd):
 values have not yet been applied to a Cost Performance Report (CPR) performance measurement baseline, the cost variance data shown reflects prior (pre-global settlement) contract values. These variances will be adjusted when global settlement FFP values are factored to a new CPR performance measurement baseline. Variances are expected to be minimized or eliminated. The current FM cost Estimate At Completion (EAC) for this contract is \$200.4M; the contractor's EAC is \$192.6M.

IMUSA's production efficiencies have improved markedly. The company has delivered 4 of the 8 ships awarded them—the most recent of which was MHC 58 which delivered 1/16/96. The FM estimates that the remaining ships under contract, MHCs 59-62, will deliver at their maximum (earliest) incentive dates. Current Navy FM delivery estimates are: MHCs 59, 10/96; MHC 60, 7/97; MHC 61, 4/98; and MHC 62, 12/98.

NOTE: The prior (December 1994) MHC SAR submission included contract coverage for IMUSA's third production ship, MHC 55, which was delivered during May 95. Having delivered, the ship contract is no longer reported in the SAR.

MHC 61/62 (OPTION): INTERMARINE USA, SAVANNAH, GA N00024-92-C-2203, FPI/FFP Award: March 31, 1993 Definitized: March 31, 1993	<table border="0"> <tr> <th colspan="3">Initial Contract Price</th> </tr> <tr> <th>Target</th> <th>Ceiling</th> <th>Qty</th> </tr> <tr> <td>\$118.8</td> <td>\$133.2</td> <td>2</td> </tr> </table>	Initial Contract Price			Target	Ceiling	Qty	\$118.8	\$133.2	2
Initial Contract Price										
Target	Ceiling	Qty								
\$118.8	\$133.2	2								

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$157.4	N/A	2	\$157.4	\$157.4

Previous Cumulative Variances	Cost Variance	Schedule Variance
Cumulative Variances To Date (11/30/95)	\$-2.8	\$-11.5
Net Change	\$-5.0	\$1.9
	\$-2.2	\$13.4

Explanation of Change:

MHCs 61 & 62 are IMUSA's final production ships and the last 2 ships of the 12 ship program. The MHC 61/62 procurement is an option to the basic MHC 58-60 contract. This option is subject to the same global settlement conditions applicable for the base MHC 58-60 contract, i.e., conversion from FPI to FFP with early delivery schedule incentives.

Contract values noted above are to global settlement terms; variances

MHC 51, December 31, 1995

15. Contract Information (Cont'd):

are to pre-global settlement values and reflect November 95 CPR data. CPR rebaselining to current values is expected to be provided in the February 96 CPR (available late March 96). The current PM and contractor price EAC are at the contract's current firm fixed price of \$157.4M. Of note, current CPR reported cost and schedule variances represent significant improvement over those reported on the previous SAR. These values will be adjusted to reflect recently revised FFP contract cost baselines in the February 95 CPR which will be available in March. The PM estimates that MHC 61 and 62 will deliver to, or perhaps earlier than, current maximum global settlement delivery dates. The current PM delivery estimates, which reflect maximum (early) incentive dates are: MHC 61, 4/98 and, MHC 62, 12/98.

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 73.3% (11 yrs/15 yrs)
- (2) Percent Program Cost Appropriated: 98.7% (\$1691.0 / \$1713.7)

b. Appropriation Summary (Then-Year Dollars in Millions)

Appropriation	Prior Years (FY86-95)	Budget Year (FY96)	Budget Year (FY97)	Balance To Complete (FY98-2000)	Total
ROT&E	16.2	-	-	-	16.2
Procurement	1662.2	12.6	10.0	12.7	1697.5
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1678.4	12.6	10.0	12.7	1713.7

16c. Program Funding Summary (Cont'd):

c. Annual Summary --

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1986		1.8		1.8	1.5	1.5	1.5	2.8
1987		7.9		7.9	6.7	6.7	6.7	2.7
1988		4.3		4.3	3.8	3.8	3.8	3.0
1989		3.7		3.7	3.4	3.4	3.4	4.2
1990		0.8		0.8	0.8	0.8	0.8	4.0
Subtot		18.5		18.5	16.2	16.2	16.2	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1986	1		284.0	277.2	259.3	243.9	171.7	1.4
1987				0.2	0.2	0.2	0.2	1.5
1988								2.6
1989	2		281.6	270.8	274.8	258.9	226.7	3.3
1990	2		240.8	247.9	258.9	241.8	222.0	1.1
1991	2		208.5	200.3	215.4	189.7	169.3	1.6
1992	3		338.9	328.5	363.9	313.5	220.6	2.5
1993	2		242.6	248.8	279.2	223.3	101.8	3.2
1994				4.3	5.0	4.2	4.2	4.2

MHC 51, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY92 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1995				4.6	5.5	4.4	1.5	3.8
1996				10.4	12.6			2.0
1997				8.1	10.0			2.2
1998				7.1	9.0			2.2
1999				1.6	2.1			2.3
2000				1.2	1.6			2.2
Subtot	12		1596.4	1611.0	1697.5	1479.9	1118.0	
Grand Total	12	18.5	1596.4	1629.5	1713.7	1496.1	1134.2	

FY 1990 "Flyaway" column excludes \$14.6M FY 92 base year of SQQ 32 Sonar and SLQ 48 MNS battle spares which are classed as "initial spares."

17. Production Rate Data:

a. Deliveries to Date —

	Plan/Actual
RD&E	0/0
Procurement	4/4

Section 17a planned and actual delivery numbers are through 12/31/95. Through 2/28/96, six ships have been delivered.

b. Approved Design-to-Cost Objective — N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

O & S costs associated with the Coastal Minehunter (MHC) are based on a 35 year service life. Factors and associated O & S cost estimates are based on a new design ship class with first unit delivering in the May/June 1993 timeframe. Estimates are based on an "operating tempo" approach and include direct costs to support the primary personnel to operate the ships (currently authorized force level of 12 ships), Operations (including fuel, repair parts, supplies, training, and purchased services), Intermediate and Depot level maintenance, and Indirect Costs including training, publications, engineering and technical services.

b. Costs -- (FY 1992 Constant (Base-Year) Dollars in Millions)

Cost Element	Cost Element Avg Annual Cost Per Ship	Avg Annual Cost Per Ship
Direct Personnel	1.8	N/A
Unit Operations	0.6	N/A
Fuel	0.2	N/A
Direct Maintenance	1.4	N/A
Indirect Costs	0.1	N/A
Total	4.1	N/A

c. Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP (Q&A) 823)
PROGRAM: MILSTAR

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
Milstar Satellite Communications Systems

2. (U) DoD Component: USAF

3. (U) Responsible Office and Telephone Number:

SNC/MC
2420 Vela Way
Suite 1467-A8
Los Angeles AFB, CA 90245-4659

BGen Leonard F. Kwiatkowski
Assigned: December 9, 1991
AV 833-4877 COMM 310-336-4877

4. (U) Program Elements/Procurement Line Items:

RDT&E:

FE 0303601F, 0303603F, 0604479F

PROCUREMENT:

- APPN 1506 ICN 20MLSTRS (Navy)
- APPN 2035 ICN 20MLSTRS (Army)
- APPN 3010 ICN 20MLSTRS (Air Force)
- APPN 3080 ICN 20MLSTRS (Air Force)

SAF/PAS

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MILSTAR, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

MILCOM:

PE 0303601F

5. (U) Related Programs:

Secure Mobile Anti-jam Reliable Tactical Terminal (SMART-T)
Single Channel Anti-jam Man Portable (SCAMP)
Navy Extremely High Frequency Satellite Communications Program (NEHF)
Titan IV Space Launch Vehicle
Milstar Polar Adjunct
Advanced MILSATCOM

6. (U) Mission and Description:

The Milstar Satellite Communications System, which in part takes over the mission of DSCS and AFSATCOM, is a joint service program to develop and acquire the Milstar satellite, its mission control segment, and Army, Navy and Air Force communications terminals. The Milstar system will provide survivable, jam-resistant, world-wide secure communications for the National Command Authorities and Commanders-in-Chief to command and control their tactical and strategic forces at all levels of conflict.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

In 1983, the Milstar Satellite Communications System program was designated with the highest national priority. After a short feasibility study, the Space and Mission Control program proceeded directly into the Full Scale Development (FSD) phase. The FSD contract was awarded in Jun 83.

The Command Post (CP) Terminal Program began in 1983 with a demonstration/validation phase. FSD began in Jun 83 with a Raytheon/Rockwell team awarded the FSD contract under a leader/follower strategy. After Milestone IIIA for Low-Rate Initial Production (LRIP) was held in May 89, the LRIP contracts to procure Command Post Terminals were awarded in Sep 89.

The Low Cost Terminal (LCT) was intended to support users at a lower cost while retaining nearly the same functionality as the CP Terminal. Risk reduction contracts were awarded in Jan 92 and the LCT program was designated a Low Level Technology Demonstration (LLTD) program in Aug 92. However, the program was terminated due to lack of firm user requirements. The Command Post Terminal "Buyout" contracts were awarded in May 93 for the remaining 44 terminals to both Rockwell and Raytheon.

In the National Defense Authorization Act for FY91, Congress directed the Department of Defense to restructure the Milstar system to

MILSTAR, December 31, 1995

7a. (U) Program Highlights (Cont'd):

reduce cost, increase the utility of the system for tactical users, and eliminate enduring nuclear warfighting capabilities. As a result, the number of satellites, mission control stations and terminals was reduced. Furthermore, features associated with nuclear hardness and survivability were reduced and capabilities to support tactical requirements were added. The Milstar II satellite will incorporate the Low Data Rate payload of the original Milstar satellite and add a new Medium Data Rate payload. A contract for the Milstar II satellite development was awarded in Oct 92 following a successful Oct 92 Defense Acquisition Board (DAB) Program Review.

In Dec 92 the First Development Flight Satellite (Sat-1, formerly DFS-1) was delivered to storage in preparation for a FY93 launch. However, as a result of an Aug 93 Titan IV failure and an Aug 92 Centaur failure, the launch of Sat-1 was delayed until 7 Feb 94. Also, in accordance with the Office of the Secretary of Defense (OSD) sponsored Bottom-Up Review (BUR) and as directed in the Defense Planning Guidance (DPG), the program will transition after Satellite 6 to a lower cost Advanced Extremely High Frequency (AEHF) satellite. As a consequence, the Air Staff issued formal direction to initiate planning for a consolidated, multi-frequency, advanced MILSATCOM replenishment program. As a result of these schedule and programmatic changes, a Program Deviation Report (PDR), Acquisition Strategy Report (ASR), and a revised Acquisition Program Baseline (APB) were submitted.

The revised Acquisition Strategy Report (ASR) was approved by the Office of the Secretary of Defense (OSD) on 13 Jun 94, outlining our strategy for streamlined procurement of Satellites 5 and 6, including initial plans for an advanced Combined Parts Buy (CPB). The Satellite 5 and 6 contract was awarded on 1 Nov 94 after notifying Congress and satisfying the exit criteria for the build of Satellites 5 and 6 -- completion of Dedicated Asset Test (DAT) (per updated Test and Evaluation Master Plan dated 22 Apr 94) and Milstar II System Critical Design Review.

On 30 Jun 94, a contract modification was issued to convert Satellite 3 from a Low Data Rate (LDR) only to a LDR/MDR (Medium Data Rate) configuration and to reschedule Satellite 3M and Satellite 4 deliveries.

Sat 1, launched on 7 Feb 94, successfully completed Air Force Operational Test and Evaluation Center's (AFOTEC) Dedicated Asset Test (DAT) and Navy's Follow-On Operational Test and Evaluation (FOT&E) on 9 Sep 94. The program office turned over Satellite Control Authority (SCA) to Air Force Space Command (AFSPC) on 1 Nov 94.

MILSTAR, December 31, 1995

7a. (U) Program Highlights (Cont'd):

27 Command Post Low Rate Initial Production (LRIP) Terminals were delivered under target price in Jul 94.

In a 17 Jan 95 memo, the Defense Acquisition Executive (DAE) directed the program office to decouple the Advanced EHF and Milstar programs, and to appropriately revise the Milstar Acquisition Program Baseline to only include the 2 Milstar block I and 4 Milstar block II satellites. In addition, the revised baseline incorporated the current approved test plan and established new milestones in accordance with the approved Milstar Streamlined Acquisition Strategy Report. The revised Milstar APB was approved by the DAE on 6 Feb 95.

b. (U) Significant Developments Since Last Report --

On 11 May 95, the Office of the Joint Chiefs of Staff (JCS) certified the Milstar Low Data Rate (LDR) system for Emergency Action Message (EAM) dissemination and force feedback.

Transition to the Satellite Mission Control Subsystem (SMCS) was completed on schedule (13 May 95) with completion of a system confidence demonstration at Falcon AFB, CO. This new command and control system incorporates commercial hardware and upgraded software to provide for multi-satellite control.

The Milstar Operational Requirements Document (ORD) (Sep 92) requires mid-latitude satellites and a Polar Adjunct to satisfy the Acquisition Program Baseline (APB) (6 Feb 95) Full Operational Capability (FOC) coverage parameter. On 11 Jul 95, the Joint Requirements Oversight Council (JROC) approved the initial Polar ORD. In addition, on 17 Jul 95, the Defense Acquisition Executive (DAE) signed the Acquisition Decision Memorandum (ADM) to procure the first hosted payload for the interim solution to be launched in FY97 and to designate Polar as an ACAT II program. As a result, the Milstar ORD and APB are being revised to no longer include Polar requirements.

On 4 Aug 95, the Milstar system successfully completed Phase I Operational Testing & Evaluation ahead of schedule.

On 11 Aug 95, the Milstar II Mission Control Critical Design Review (CDR) was completed with no major action items. The CDR certified that the Milstar II Mission Control Segment design was producible and satisfied performance and engineering requirements.

On 6 Nov 95 Satellite 2 was successfully launched from Cape Canaveral on a Titan IV/Centaur booster. The satellite arrived at its initial

MILSTAR, December 31, 1995

7b. (U) Program Highlights (Cont'd):

testing location at 90 degrees West longitude and completed early on-orbit operations. On 15 Dec 95, Milstar demonstrated unprecedented communication capability with a message sent from the JCS to the CINCs without the use of vulnerable ground relays. The message was sent from the National Military Command Center's terminal at Ft. Belvoir, VA to Satellite 1, then crosslinked to Satellite 2, and downlinked to the CINCs.

Satellite 2 continues to progress through on-orbit developmental testing with single satellite testing nearly complete and is on schedule for transfer of Satellite Control Authority (SCA) to AFSPC in Mar 96 after repositioning to its operational test location of 4 degrees West longitude.

Thirty-six of forty-four Command Post Production Terminals have been delivered. Rockwell has completed delivery on all 24 of their terminals well ahead of contractual requirements. Raytheon, also ahead of contractual schedule, has completed delivery on 12 of 20 terminals. Ten LRIP Terminals were installed in 1995 bringing the total installations to 19.

The Milstar system is expected to satisfy all mission requirements.

c. (U) Changes Since As Of Date -- None.

8. (U) Threshold Breaches:

There are no breaches to the DAB approved Acquisition Program Baseline (APB) dated February 6, 1995, and no Humm-McCurdy unit cost breaches.

9. (U) Schedule:

Satellites

a. (U) Milestones --

	Development Estimate	Approved Program	Current Estimate
Milstar I Dev Contract Award	JUN 83	JUN 83	JUN 83
LDR Payload/Bus CDR	JUL 87	JUL 87	JUL 87
Mission Control Segment CDR	AUG 88	AUG 88	AUG 88
DAB Program Review	SEP 92	OCT 92	OCT 92
Milstar II Contract Award	OCT 92	OCT 92	OCT 92
Satellite 1 Delivery	DEC 92	DEC 92	DEC 92
Satellite 1 On-Orbit DT&E Start	JUL 93	FEB 94	FEB 94

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9a. (U) Schedule (Cont'd):
Satellites

(U) Milestones (Cont'd) --	Development Estimate	Approved Program	Current Estimate
Complete	JAN 94	JUN 94	JUN 94
Milstar I Phase 1 IOT&E			
Start	FEB 94	Aug 94	Aug 94
Complete	Aug 94	SEP 95	Aug 95 (Ch-1)
Dedicated Asset Test			
Start	N/A	Aug 94	Aug 94
Complete	N/A	SEP 94	SEP 94
Milstar I Phase 2 IOT&E			
Start	MAY 95	MAR 96	Aug 96 (Ch-2)
Complete	NOV 95	SEP 96	FEB 97 (Ch-2)
IOC I	MAR 96	JAN 97	JUN 97 (Ch-2)
Mission Control Organic Support Capability	SEP 96	SEP 96	SEP 96
Milstar II IOT&E			
Start	APR 99	Aug 99	Aug 99
Complete	SEP 99	FEB 00	FEB 00
Milstar II MS III	SEP 99	N/A	N/A
IOC II	OCT 00	OCT 00	OCT 00
Constellation Control Organic Support	DEC 00	DEC 00	DEC 00
FOC	DEC 04	DEC 04	DEC 04

Acronyms & Abbreviations:

- CDR - Critical Design Review Capability
- DAB - Defense Acquisition Board
- Dev - Development
- DT&E - Developmental Test and Evaluation
- FOC - Full Operational Capability
- IOC - Initial Operational Capability
- IOT&E - Initial Operational Test and Evaluation
- LDR - Low Data Rate
- MS - Milestone

b. (U) Previous Change Explanations --

Satellite 1 On-Orbit DT&E and Milstar I Phase 1 and Phase 2 IOT&E milestones delayed due to an Aug 92 launch failure of a Centaur upper stage on an Atlas launch vehicle which impacted the planned launch of the first Development Flight Satellite (DFS-1, now Sat-1).

Milstar II IOT&E, MS III, and IOC II milestones changed due to \$180M budget reduction in the FY94 President's Budget.

MILSTAR, December 31, 1995

9b. (U) Schedule (Cont'd):
Satellites

New Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E testing milestones replaced Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E Start/Complete milestones.

Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones changed to reflect change in DFS-2 launch manifest date.

Milstar II MS III milestone deleted due to removal of production phase per the Defense Planning Guidance resulting from the Bottom-Up Review (BUR). Advanced EHF MS I milestone added to reflect transition to lower cost satellites launch on Medium Launch Vehicles.

Milstar II IOT&E milestones changed to reflect availability of Titan IV/Centaur and Launch Complex to support manifested launch dates.

Milstar I Phase 1 IOT&E Complete Milestone changed to reflect revised testing strategy in DAE approved Acquisition Program Baseline (APB) dated 6 Feb 95.

Advanced EHF MS I deleted in the Current Estimate due to 17 Jan 95 DAE decision to exclude Advanced MILSATCOM from the Milstar baseline.

c. (U) Current Change Explanations --

(Ch-1) Program Manager's Current Estimate for Milstar I Phase 1 IOT&E Complete changed from Sep 95 to Aug 95 to reflect early completion of test.

(Ch-2) Program Manager's Current Estimate for Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones slipped by five months. A Titan IV issue, which delayed the launch of Satellite 2 until Nov 95, Satellite repositioning, and Air Force Operational Test and Evaluation Center (AFOTEC) entrance criteria have delayed the start of Milstar I Phase 2 IOT&E testing from Mar 96 until Aug 96 and complete from Sep 96 to Feb 97. IOC I changed from Jan 97 to Jun 97.

d. (U) References --

(U) Development Estimate:
DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated February 06, 1995.

MILSTAR, December 31, 1995

9d. (U) Schedule (Cont'd):
CP Terminals

a. (U) Milestones --	Production Estimate	Approved Program	Current Estimate
Critical Design Review	FEB 84	FEB 84	FEB 84
Phase II Development			
Start	JUN 85	JUN 85	JUN 85
Complete	JUN 91	JUN 91	JUN 91
MS IIIA	MAY 89	MAY 89	MAY 89
First Delivery	AUG 92	AUG 92	AUG 92
Satellite 1 On-Orbit DT&E			
Start	APR 93	FEB 94	FEB 94
Complete	SEP 93	JUN 94	JUN 94
Milstar I Phase 1 IOT&E			
Start	OCT 93	AUG 94	AUG 94
Complete	APR 94	SEP 95	AUG 95 (Ch-1)
Dedicated Asset Test			
Start	N/A	AUG 94	AUG 94
Complete	N/A	SEP 94	SEP 94
Milstar I Phase 2 IOT&E			
Start	NOV 94	MAR 96	AUG 96 (Ch-2)
Complete	MAR 96	SEP 96	FEB 97 (Ch-2)
IOC I	MAR 96	JAN 97	JUN 97 (Ch-2)
IOC II	OCT 00	OCT 00	OCT 00
Organic Support Capability	DEC 00	DEC 00	DEC 00
FOC	DEC 04	DEC 04	DEC 04

Acronyms & Abbreviations:

- CDR - Critical Design Review
- DT&E - Developmental Test and Evaluation
- FOC - Full Operational Capability
- IOC - Initial Operational Capability
- IOT&E - Initial Operational Test and Evaluation
- MS - Milestone

b. (U) Previous Change Explanations --

Satellite 1 On-Orbit DT&E and Milstar I Phase 1 and Phase 2 IOT&E milestones delayed due to an Aug 92 launch failure of a Centaur upper stage on an Atlas launch vehicle which impacted the planned launch of the first Development Flight Satellite (DFS-1, now Sat-1).

Milstar I Phase 2 IOT&E milestones changed due to planned APB revisions.

MILSTAR, December 31, 1995

9b. (U) Schedule (Cont'd):

CP Terminals

IOC II milestone changed due to \$180M budget reduction in the FY94 President's Budget.

New Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E testing milestones replaced Satellite 1 On-Orbit DT&E and Milstar I Phase 1 IOT&E Start/Complete milestones.

Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones changed to reflect change in DPS-2 launch manifest date.

Milstar I Phase 1 IOT&E Complete Milestone change reflects revised testing strategy in DAE approved Acquisition Program Baseline (APB) dated 6 Feb 95.

c. (U) Current Change Explanations --

(Ch-1) Program Manager's Current Estimate for Milstar I Phase 1 IOT&E Complete changed from Sep 95 to Aug 95 to reflect early completion of test.

(Ch-2) Program Manager's Current Estimate for Milstar I Phase 2 IOT&E Start/Complete and IOC I milestones slipped by five months. A Titan IV issue, which delayed the launch of Satellite 2 until Nov 95, Satellite repositioning, and Air Force Operational Test and Evaluation Center (AFOTEC) entrance criteria have delayed the start of Milstar I Phase 2 IOT&E testing from Mar 96 until Aug 96 and complete from Sep 96 to Feb 97. IOC I changed from Jan 97 to Jun 97.

d. (U) References --

(U) Production Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

10. (U) Performance Characteristics:

Satellites

a. (U) Performance --	DE	Approved	Demon-	Current
		Program	strated	
		Objective/Threshold	Perf	Estimate
Polar				
Coverage	65N-90N	65N-90N / 65N-90N	65N-90N	65N-90N
Hrs/day	24	24 / 16	16	16
Capacity Payload				

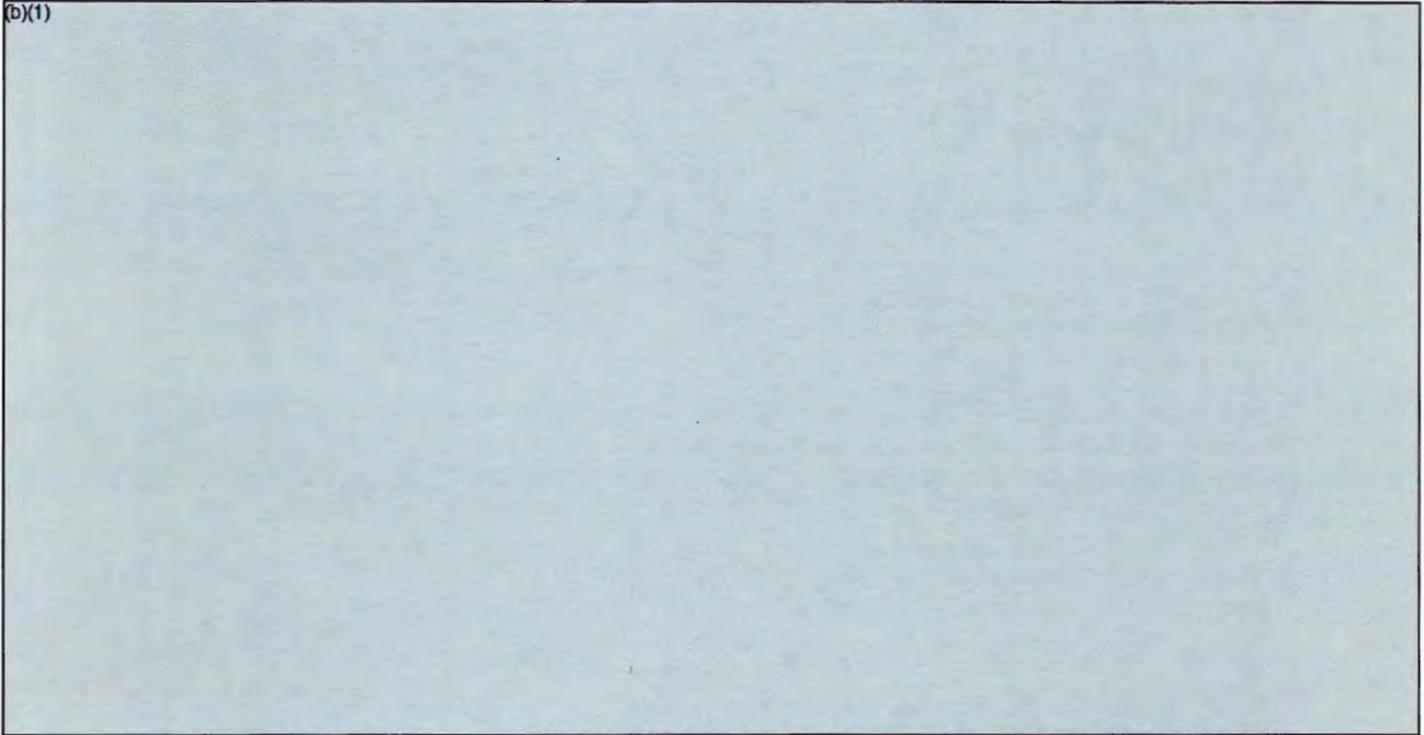
10a. (U) Performance Characteristics (Cont'd):
Satellites

	DE	Approved Program Objective/Threshold		Demonstrated Perf	Current Estimate
Uplink	TBD	TBD	/ TBD	TBD	TBD
Downlink	TBD	TBD	/ TBD	TBD	TBD
Crosslink	TBD	TBD	/ TBD	TBD	TBD
UHF	TBD	TBD	/ TBD	TBD	TBD
Anti-jam Capability	TBD	TBD	/ TBD	TBD	TBD
Scintillation Protection	TBD	TBD	/ TBD	TBD	TBD
Mid Latitude Coverage	65S-65N	65S-65N	/ 65S-65N	65S-65N	65S-65N
LDR					
Hrs/day	24	24	/ 24	24	24
Capacity/Payload (Kbps)					
Uplink	315	315	/ 225	240	240
Downlink	485	485	/ 340	500	500
Crosslink	170	170	/ 115	130	130
MDR					
Hrs/day	24	24	/ 24	24	24
Capacity/Payload	1 WSA & +1 ECA & +3 MSA & +4 LSA	1 WSA & +1 ECA & +3 MSA & +4 LSA	/ 1 WSA & +3 MSA	1 WSA & +3 MSA	1 WSA & +3 MSA
Uplink (Mbps)	57	57	/ 43	57.399	57.399
WSA	40	40	/ 30	30	30
MSA	12	12	/ 6	6	6
Downlink (Mbps)	76	76	/ 38	39.68	39.68
Crosslink (Mbps)	6.3	6.3	/ 3.2	5	5

(b)(1)

10a. (U) Performance Characteristics (Cont'd):
Satellites

DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
----	--	---------------------------	---------------------



DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
LDR UHF Compati- bility	AFSATCOM FLTBCST	AFSATCOM / FLTBCST	AFSATCOM FLTBCST
Capacity (links • bps)	4 • 75 & 1 • 1200	4 • 75 & / 1 • 1200	4 • 75 & 1 • 1200
LDR Interoperability	MIL-STD 1582C MJCS1-87	MIL-STD / 1582C MJCS1-87	MIL-STD 1582C MJCS1-87
MMD (months)			
LDR	84	/ 84	84
MDR	84	/ 84	84
Constellation			
Control Stations			
R&M (MCE + Fixed CP) (hrs)			
MTBCF (hrs)	221	/ 221	297
MTTRF (hrs)	1.0	/ 1.0	1.0
Satellite Design Weight (lbs)	10000	/ N/A	N/A

10a. (U) Performance Characteristics (Cont'd):
Satellites

	DE	Approved Program Objective/Threshold	Demon- strated Perf	Current Estimate
Milstar I Weight (lbs)	N/A	TitanIV/ / TitanIV/ Centaur Centaur compati- compati- ble ble	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble
Milstar II Weight (lbs)	N/A	TitanIV/ / TitanIV/ Centaur Centaur compati- compati- ble ble	TitanIV/ Centaur compati- ble	TitanIV/ Centaur compati- ble

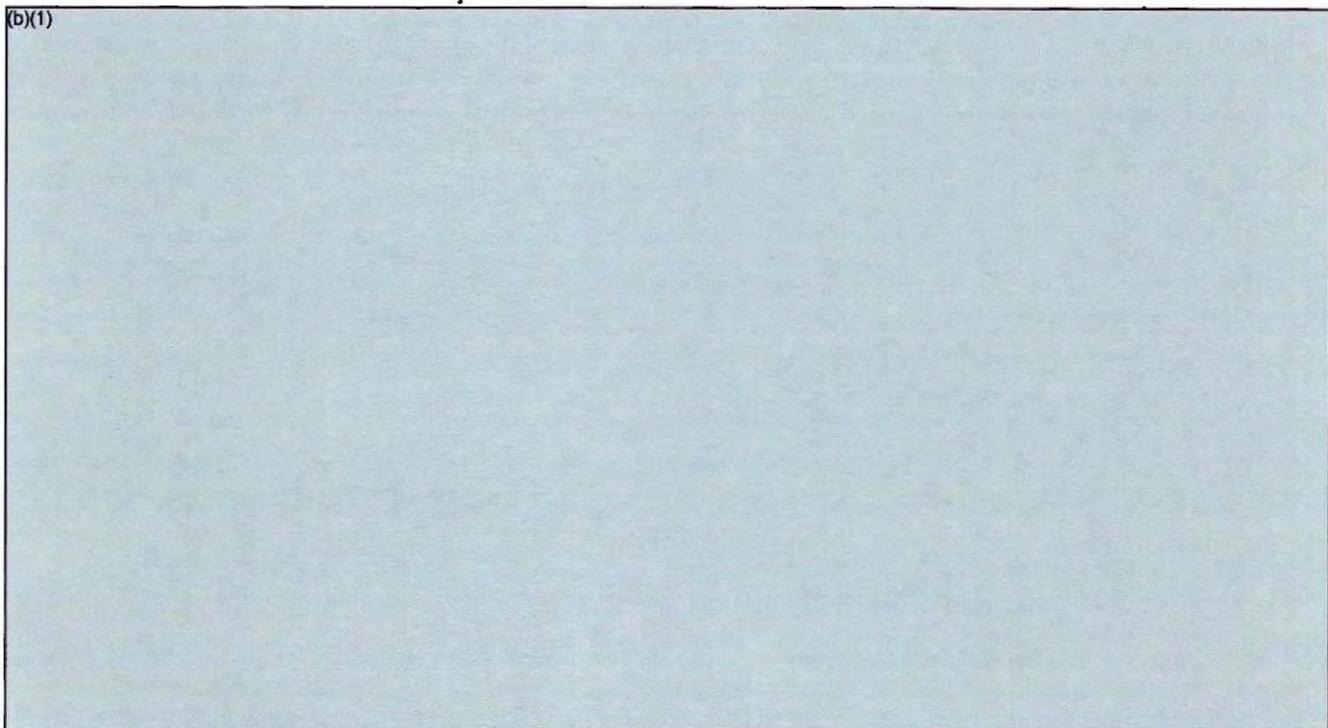
Acronyms & Abbreviations

- *****
- dBW - decibel Watts
 - EAM - Emergency Action Message
 - ECA - Earth Coverage Area
 - EIRP - Effective Isotropic Radiated Power
 - Kbps - Kilo bits per second LDR - Low Data Rate
 - LDR - Low Data Rate
 - LSA - Local Service Area
 - Mbps - Mega bits per second
 - MCE - Mission Control Element
 - MDR - Medium Data Rate
 - MIL-STD 1582C - Military Standard (Milstar Waveform)
 - MJCS - Joint Chiefs of Staff Memo
 - MMD - Mean Mission Duration
 - MSA - Medium Service Area
 - MTBCF - Mean Time Between Critical Failure
 - MTTRF - Mean Time To Restore Function
 - NCGS - Nuclear Criteria Group Secretariat
 - PCMR - Probability of Correct Message Receipt
 - R&M - Reliability and Maintainability
 - SCT - Single Channel Transponder
 - UHF - Ultra High Frequency
 - WSA - Wide Service Area

b. (U) Previous Change Explanations --



(b)(1)



c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

CP Terminals

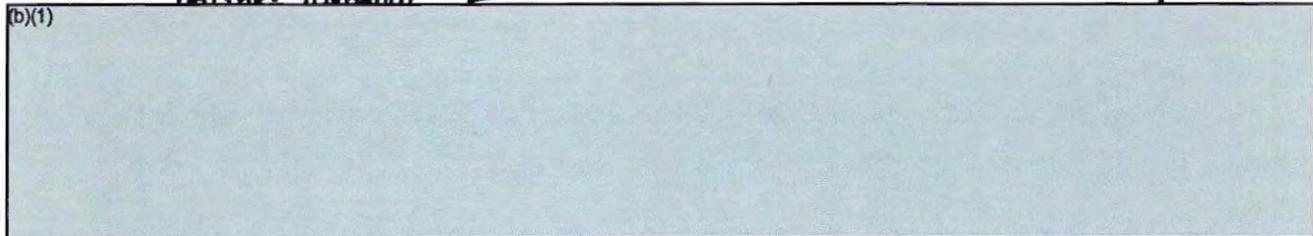
a. (U) Performance --	PdE	Approved Program Objective/Threshold	Demonstrated Perf	Current Estimate
-----------------------	-----	--------------------------------------	-------------------	------------------

Antijam Capability

LDR: (RIRP, dBW)

Relink: (O-band)

(b)(1)



10a. (U) Performance Characteristics (Cont'd):
CP Terminals

	Approved Program	Demonstrated	Current
(b)(1)			

LDR UHF Compatibility	AFSATCOM FLTBDCS	AFSATCOM / SCT	AFSATCOM SCT	AFSATCOM SCT	AFSATCOM SCT
	T SCT				
Capacity (Links @ bps)	4 @ 75 & 1 @ 1200	4 @ 75	/ 4 @ 75	4 @ 75 1 @ 1200	4 @ 75 1 @ 1200
LDR Interoperability	MIL-STD 1582C MJCS1-87	MIL-STD 1582C MJCS1-87	/ MIL-STD 1582C MJCS1-87	MIL-STD 1582C MJCS1-87	MIL-STD 1582C MJCS1-87
R&M					
MTBCF (hrs)	175	175	/ 175	175	175
MTTRF (hrs)	1.0	1.0	/ 1.0	1.0	1.0

b. (U) Previous Change Explanations --

Current Estimates for Mobile/Airborne Downlink LDR Antijam Capability and LDR Scintillation Protection were incorrectly left blank in the Dec 93 SAR.

c. (U) Current Change Explanations -- None.

d. (U) References --

(U) Production Estimate:

DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:

DAE Approved Acquisition Program Baseline dated February 06, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):
Satellites

	Development	Approved	Current
a. (b)(1)	[Redacted]		
(b)(1)	[Redacted]		

b. (U) Quantity --			
Development (RDT&E)	7	6	6
Procurement	4	0	0
Total	11	6	6

Note: All satellites are being procured with RDT&E funding. Procurement funding is for Mission Control Segment support equipment.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

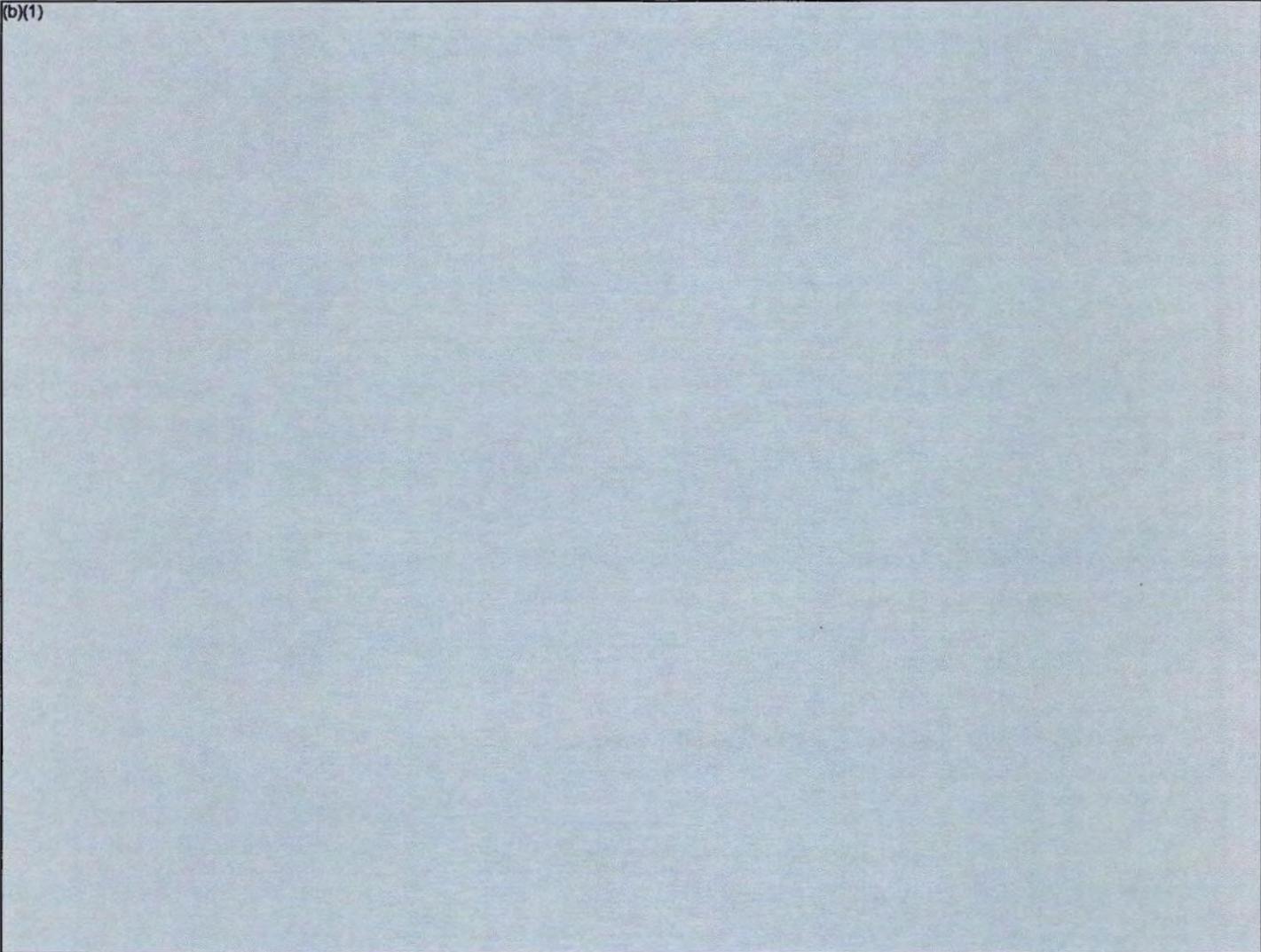
d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated February 06, 1995.

(b)(1)



c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Production Estimate:
DAE approved Acquisition Program Baseline dated October 28, 1992.

(U) Approved Program:
DAE Approved Acquisition Program Baseline dated February 06, 1995.

12. (U) Unit Cost Summary:

Satellites

	Current Estimate	UCR Baseline	Percent Change
(b)(1)			

b. (U) Procurement

(1) Cost (BY90\$)	40.0	39.0	
(2) Quantity	0	0	
(3) Unit Cost	N/A	N/A	N/A

Note: Per 1993 Defense Planning Guidance resulting from the SECDEF's Bottom-Up Review, the Milstar II program will terminate after Satellite 6 and transition to a lower cost Advanced EHF satellite with first launch no later than FY06. As a result of this direction, the Milstar II program will no longer build production satellites (8 through 11). Consequently, procurement unit cost is not applicable to the Milstar space segment.

CP Terminals

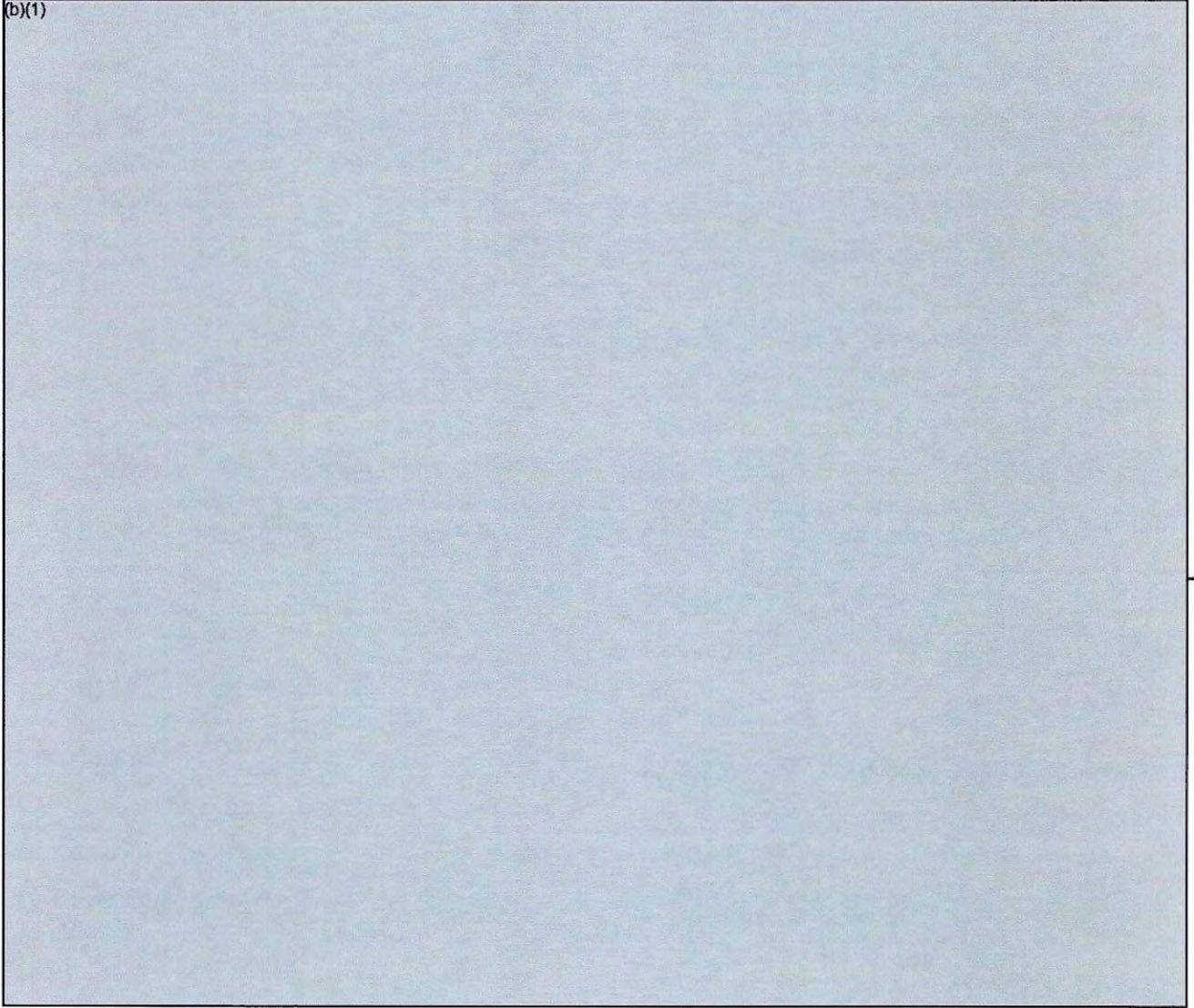
	Current Estimate (DEC 95 SAR)	UCR Baseline (FEB 95 APB)	Percent Change
(b)(1)			

b. (U) Procurement

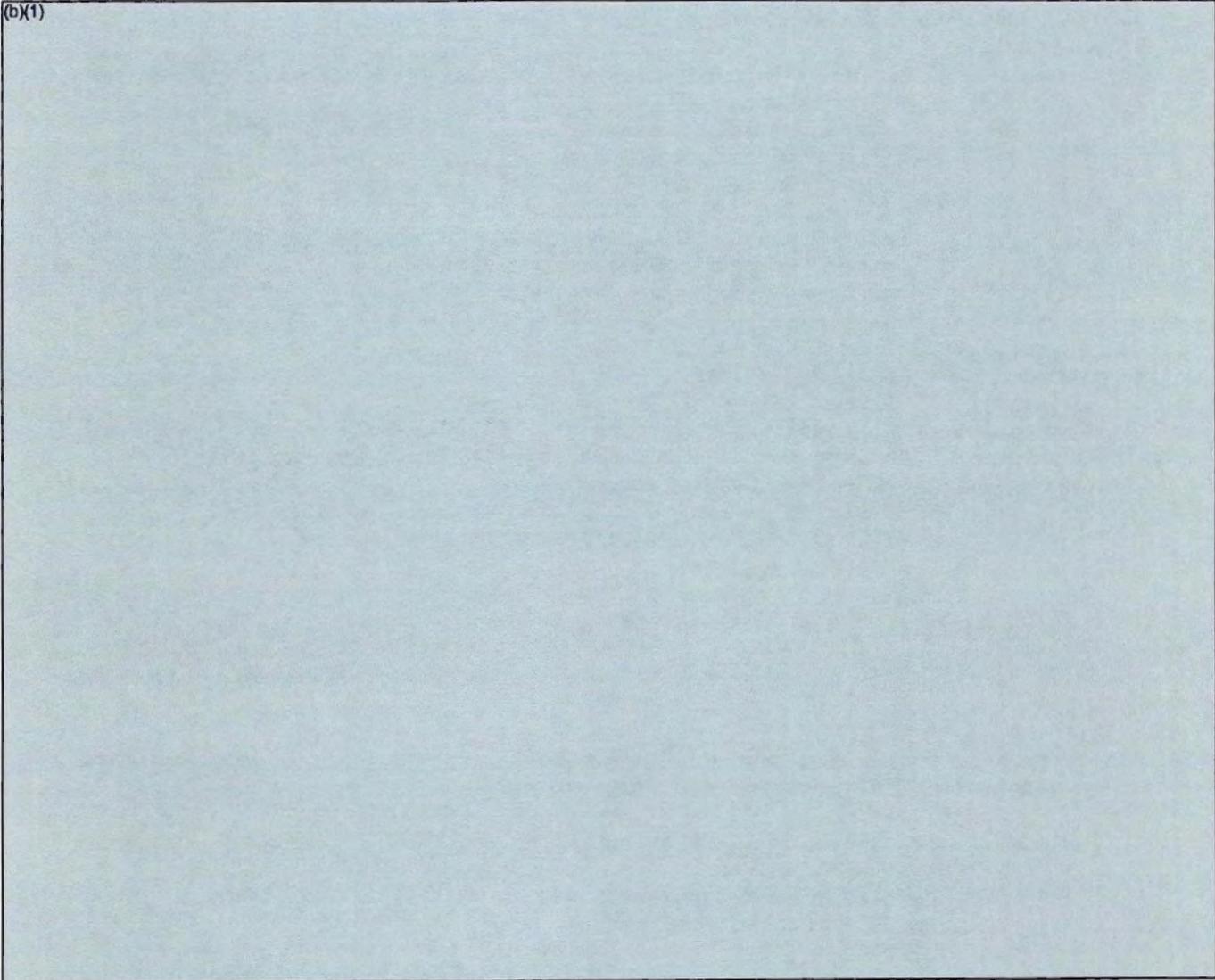
(1) Cost (BY90\$)	932.4	900.4	
(2) Quantity	87	87	
(3) Unit Cost	10.717	10.349	3.55

13. (U) Cost Variance Analysis:
Satellites

(b)(1)



(b)(1)



b. (U) Previous Change Explanations --

RDT&E

- Economic:** Revised escalation indices.
Economic adjustment for negative program change.
- Quantity:** DFS-7 deleted and 5 Advanced EHF satellites added
Removed 5 Advanced EHF satellites from Milstar baseline
- Schedule:** Streamlined Program savings
- Engineering:** Technology Insertion associated with production satellites deleted
- Estimating:** DFS-4 delivery delayed due to budget reductions and Advanced MILSATCOM Technology Program added
Adjustment for current and prior year inflation

MILSTAR, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):
Satellites

Removed Advanced MILSATCOM Technology Program from
Milstar baseline
Deleted Milstar Training Augmentation Device (MTAD)
and Mission Planning Element (MPE) Phase IIB
Increased risk for Satellites 3M and 4 due to
program funding reductions
Reduced Flight/Ground software maintenance and
program support requirements (FY95-11)
Support: 2nd Fixed Mission Control Site deleted

Procurement
Economic: Revised escalation indices.
Quantity: Milstar II production satellites 8-11 deleted
Estimating: Reallocation of funding from Milstar to DSCS
Support: Revised estimate for Satellite Mission Control
Subsystem (SMCS) spares
Reduction in Mission Planning Element (MPE) and
Milstar Mobile Constellation Control System
(MMCCS) requirements

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	Base-Year	Then-Year
(1) RDT&E		
Revised escalation indices. (Economic)	N/A	-160.2
Economic adjustment for negative program change. (Economic)	N/A	+8.9
Adjustment for Current and Prior Inflation. (Estimating)	+19.0	+25.4
Reduced Federally Funded Research and Development Center and Contractor Support (Estimating)	-14.7	-19.0
Special Termination Contract Clause (STCC) removed, Overhead rate reduction, and contract rephase. (Estimating)	-75.4	-96.0
Reduced anomaly resolution and factory testing (Estimating)	-26.6	-35.6
ECP deemed within scope of contractor baseline, funds no longer required (Estimating)	-1.6	-2.0
RDT&E Subtotal	-99.2	-278.5

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MILSTAR, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):
Satellites

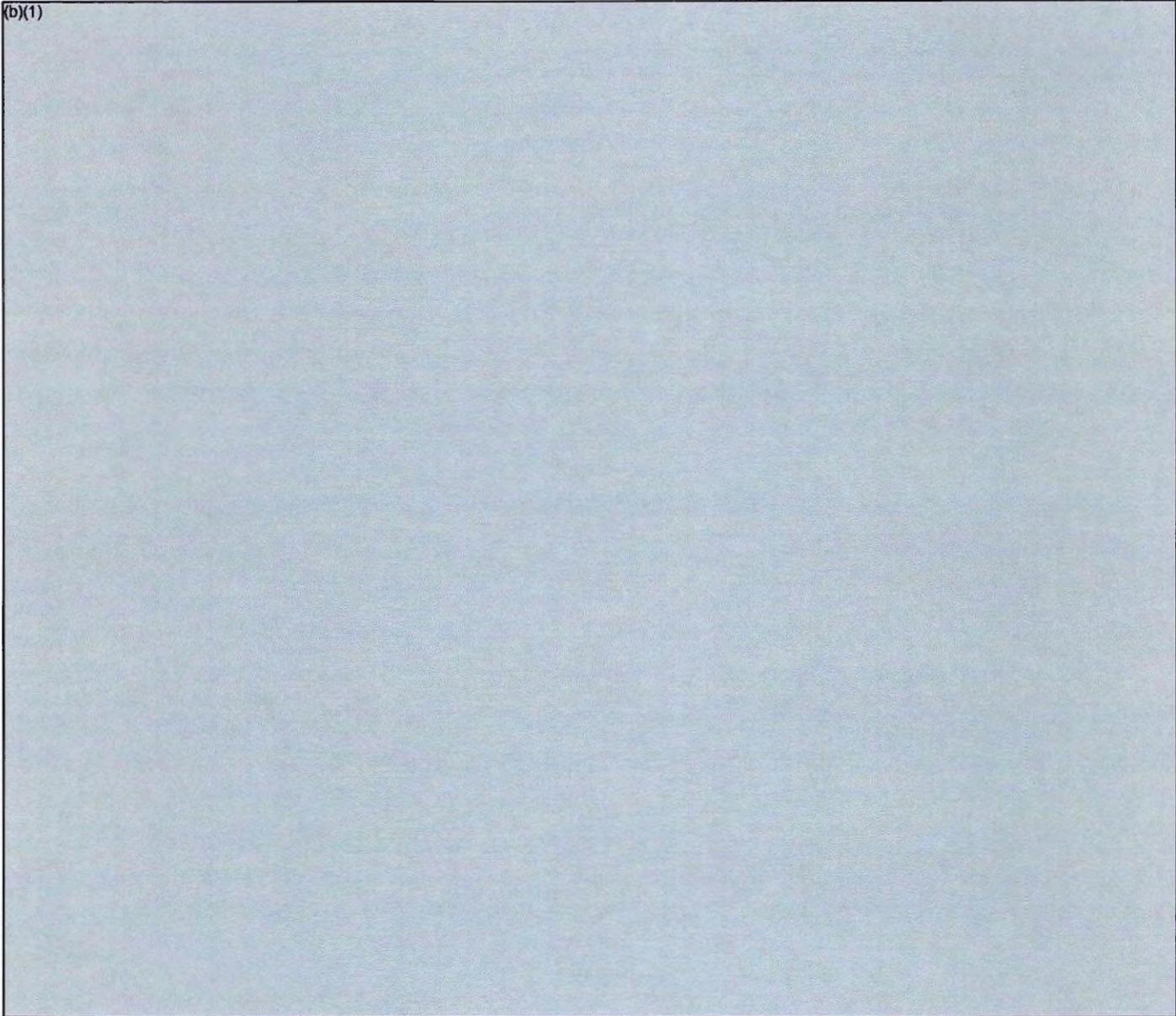
	(Dollars in Millions)	
	Base-Year	Then-Year
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-0.6
Adjustment for Current and Prior Inflation. (Support)	+0.5	+0.6
Reprogram CP Terminals FY93 Other Procurement (3080) funds for Milstar Mobile Constellation Control Subsystem (MCCS) antennas modification. (Support)	+4.2	+4.8
Procurement Subtotal	+4.7	+4.8

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MILSTAR, December 31, 1995

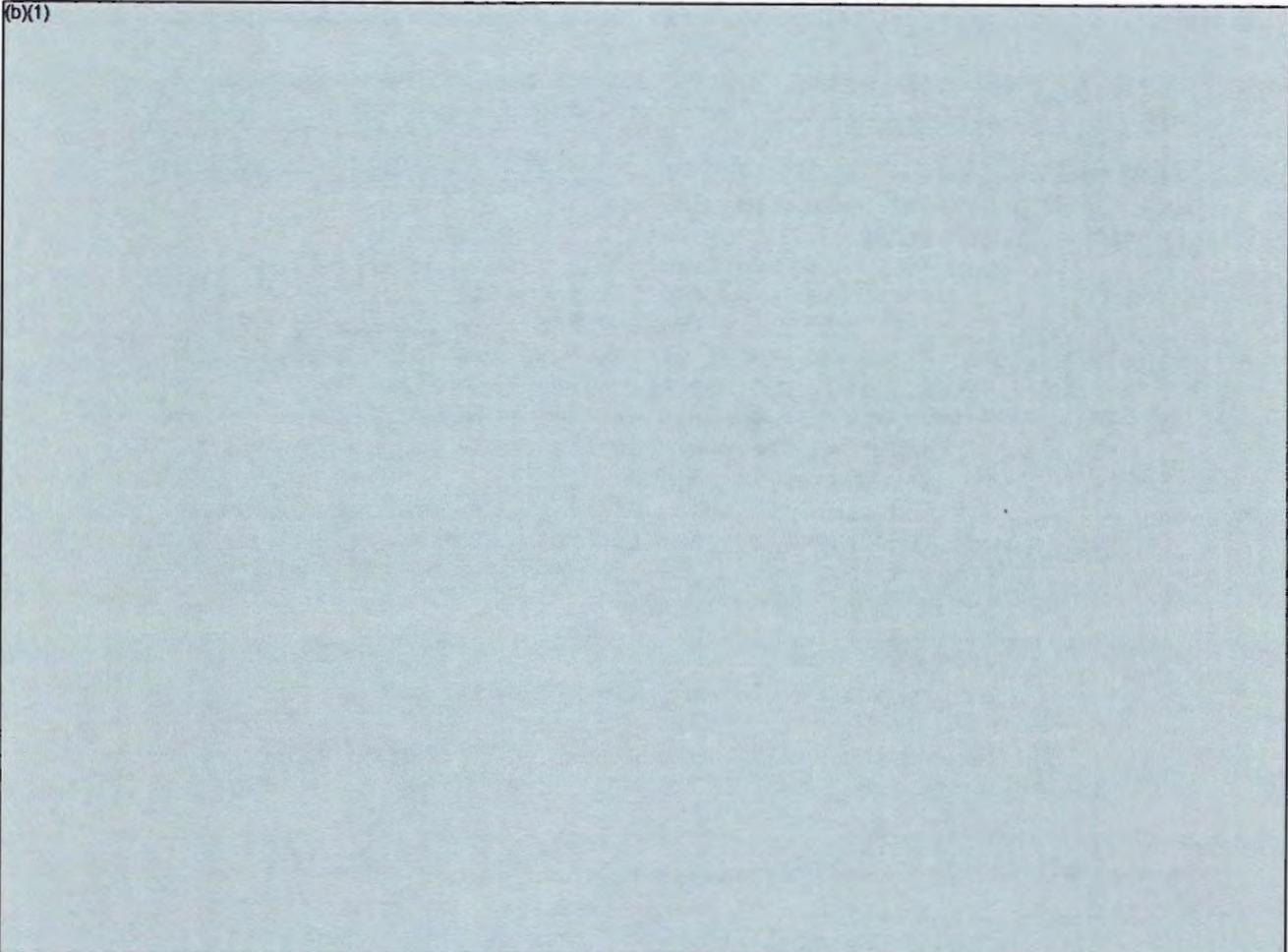
(b)(1)



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13a. ~~(S)~~ Cost Variance Analysis (Cont'd):
CP Terminals

(b)(1)



b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices
Economic adjustment for negative program change

Estimating: Command Post Terminal (CPT) requirements changed to
allow CPT to process at a Medium Data Rate (MDR).
Revised estimate for E-4 Airborne Command Post
Terminal radomes, Milstar Air Force Terminal
Remoting Subsystem and Low Cost Terminal
Adjustment for current and prior inflation
Reduced SPO operations and contractor support
estimate as development effort ramps down
Eliminated consulting services support in FY96-99

MILSTAR, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):
CP Terminals

Revised estimate due to Small Business Innovative Research (SBIR) reduction
Realigned to other procurement (3080) to cover shortfall in spares
Process Action Paper (PAP) 56 Initiative to realign program support to other procurement

Procurement

Economic: Revised escalation indices
Quantity: Reduction of 3 Navy terminals, from 11 to 8 terminals and addition of 6 Navy terminals from 8 to 14. Reduction of 5 Air Force CP Terminals from 93 to 88 terminals and additional reduction of 15 Air Force CP Terminals from 88 to 73.

Estimating: Revised estimate for terminal segment
Adjustment for current and prior year inflation
Reclassified Flyaway costs to Other Weapon Support costs in the Dec 92 SAR

Support: Revised estimate to complete procurement of radomes
Adjustment for current and prior inflation
Revised estimate to build Command Post Terminal shelters
Additional support to complete procurement of radomes
Reinstated funding for E-4 terminals and spares
Additional Army spares purchase
Reclassified Flyaway costs to Other Weapon Support costs from Dec 92 SAR

MILCON

Economic: Revised escalation indices.
Estimating: Revised number of permanent bases to two and terminal installation delayed due to budget reduction
Adjustment for current and prior inflation
Excess funds removed during MILCON cleanup

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E		
Revised escalation indices. (Economic)	N/A	+0.7
Adjustment for Current and Prior Inflation. (Estimating)	-4.8	-4.1

MILSTAR, December 31, 1995

13c. (U) Cost Variance Analysis (Cont'd):
CP Terminals

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to offset negative program change (Estimating)	+1.4	+1.8
Funding reductions for a general reduction, Federally Funded Research and Development Center (FFRDC) and Bosnia (Estimating)	-1.3	-1.6
Funds moved from procurement (3080) to RDT&E (3600) to fund IOT&E extension (Estimating)	+10.1	+12.4
Funds moved from RDT&E (3600) to procurement (3080) to cover Secure Module Anti-Jam Reliable Tactical Terminal (SMART-T) shortfalls (Estimating)	-5.1	-6.7
RDT&E Subtotal	<u>+0.3</u>	<u>+2.5</u>
(2) Procurement		
Revised escalation indices. (Economic)	N/A	-4.5
Revised estimate for Navy Flyaway Costs (Estimating)	-0.2	-0.2
Adjustment for Current and Prior Inflation. (Support)	+2.5	+2.6
Reprogram additional funds for spares (Support)	+0.2	+0.2
Reduced level of spares Obligation Authority (3010 A/C Proc) in FY97. (Support)	-0.6	-0.7
Funding reduced in FY95 aircraft procurement (3010) in error; reinstated in FY94 E-4 aircraft procurement (3010) (Support)	+2.6	+3.0
Realign dollars from spares for Milstar Mobile Constellation Control System (MMCCS) funding (Support)	-6.3	-7.2
Reprogram to fund Milstar Air Force Terminal Remoting Subsystem (MAFTRS) shortfall. (Support)	-1.6	-1.9
Realign dollars to Prime Mission Equipment (PME) for MMCCS Antenna mod (Support)	+2.4	+2.9

13c. (U) Cost Variance Analysis (Cont'd):
CP Terminals

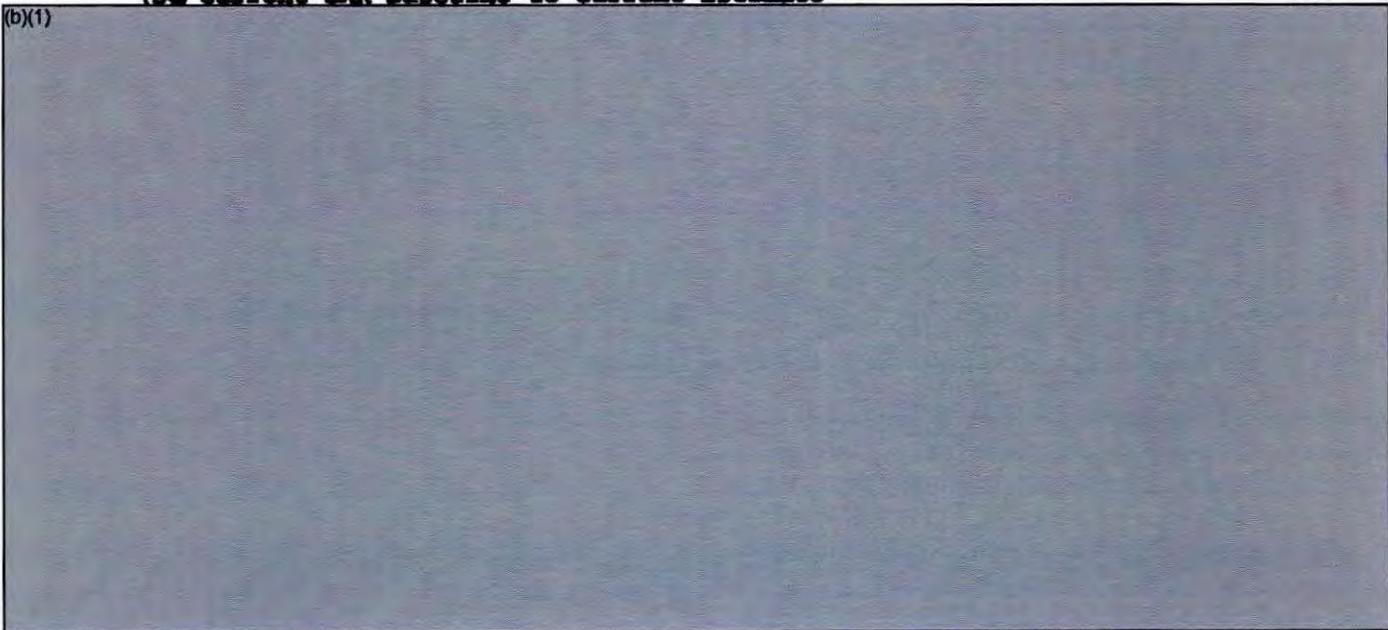
	(Dollars in Millions)	
	Base-Year	Then-Year
Reduction of FY95 spares requirements (Support)	-1.0	-1.2
Increase in spares for Computer Procurement Upgrade Test Station (Support)	+3.1	+3.8
Funds moved to RDT&E (3600) to fund software enhancements (Support)	-0.9	-1.1
Reallocated funds from Tactical to Command Post Terminals (Support)	+13.4	+17.9
Procurement Subtotal	+13.3	+13.2
(3) MILCON		
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for Current and Prior Inflation. (Estimating)	+0.3	+0.3
MILCON Subtotal	+0.3	--

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Satellites

Current SAR Baseline to Current Estimate --

(b)(1)



MILSTAR, December 31, 1995

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) EDT&E --		Initial Contract Price		
(U) Milstar II Satellites:		Target	Ceiling	Qty
Lockheed Mal & Space Co, Sunnyvale, CA				
F04701-92-C-0049, CPAF		\$1659.5	N/A	1
Award: October 30, 1992				
Definitized: October 30, 1992				
Current Contract Price		Estimated Price At Completion		
Target	Ceiling	Qty	Contractor	Program Manager
\$3739.9	N/A	4	\$3736.7	\$3736.7
Previous Cumulative Variances		Cost Variance	Schedule Variance	
Cumulative Variances To Date (01/28/96)		\$5.5	\$-8.6	
Net Change		\$26.3	\$-5.2	
		\$20.8	\$3.4	

Explanation of Change:

Cost variance improved from \$5.5M to \$26.3M which represents a 2.1% underrun. Low Data Rate (LDR) payload manufacturing efficiencies and favorable subcontractor overhead rate adjustments have been the main drivers for the favorable cost variance. The Medium Data Rate (MDR) payload, which represents the major development work on this contract, has experienced 12 straight months of favorable cost variance and the subcontract is expected to achieve its target cost upon completion.

Schedule variance improved from -\$8.6M to -\$5.2M. The unfavorable schedule variance is due mainly to spacecraft subcontract delays and late qualification of some MDR complex parts. These issues do not represent a significant risk to hardware delivery or satellite launch availability.

Current Contract Target Price decreased by \$7.4M since the Dec 94 SAR. The decrease is due to acquisition reform savings which were partially offset with the Medium Data Rate (MDR) upgrade to the Milstar Mobile On-Orbit Support Equipment (MOOSE), Low Data Rate Communication Asset Monitor (LDR CAM) and other new Engineering Change Proposals (ECPs) to the contract.

There is no impact to the contract or to the program.

MILSTAR, December 31, 1995

15. (U) Contract Information (Cont'd):

b. (U) Procurement --
 (U) CP Production Terminals:
 Raytheon, Malborough, MA
 F19628-93-C-0032, FFP
 Award: May 28, 1993
 Definitised: May 28, 1993

	Initial Contract Price		
	Target	Ceiling	Qty
	\$74.0	N/A	20

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$123.8	N/A	20	\$123.8	\$123.8

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current Contract Target Price increased from \$97.5M to \$123.8M due to Production Engineering Support, Nuclear Hardness Maintenance/ Hardness Surveillance (HM/HS) Hydrophobic Coating, Antenna/Pedestal Assembly, Terminal Software Test Facility, Advanced Computer Program Maintenance Facility Mod Contingency-Antennas/ Pedestal Assembly (C-A/PAs) MSCCS & Milstar Communication Vehicle (MCV) Platforms and Spares and additional Equipment.

(U) CP Production Terminals:
 Rockwell, Richardson, TX
 F19628-93-C-0033, FFP
 Award: May 28, 1993
 Definitised: May 28, 1993

	Initial Contract Price		
	Target	Ceiling	Qty
	\$111.3	N/A	24

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$123.6	N/A	24	\$123.6	\$123.6

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

Current Contract Target Price changed from \$115.3M to \$123.6M due to Production Engineering Support and Spares and additional Equipment.

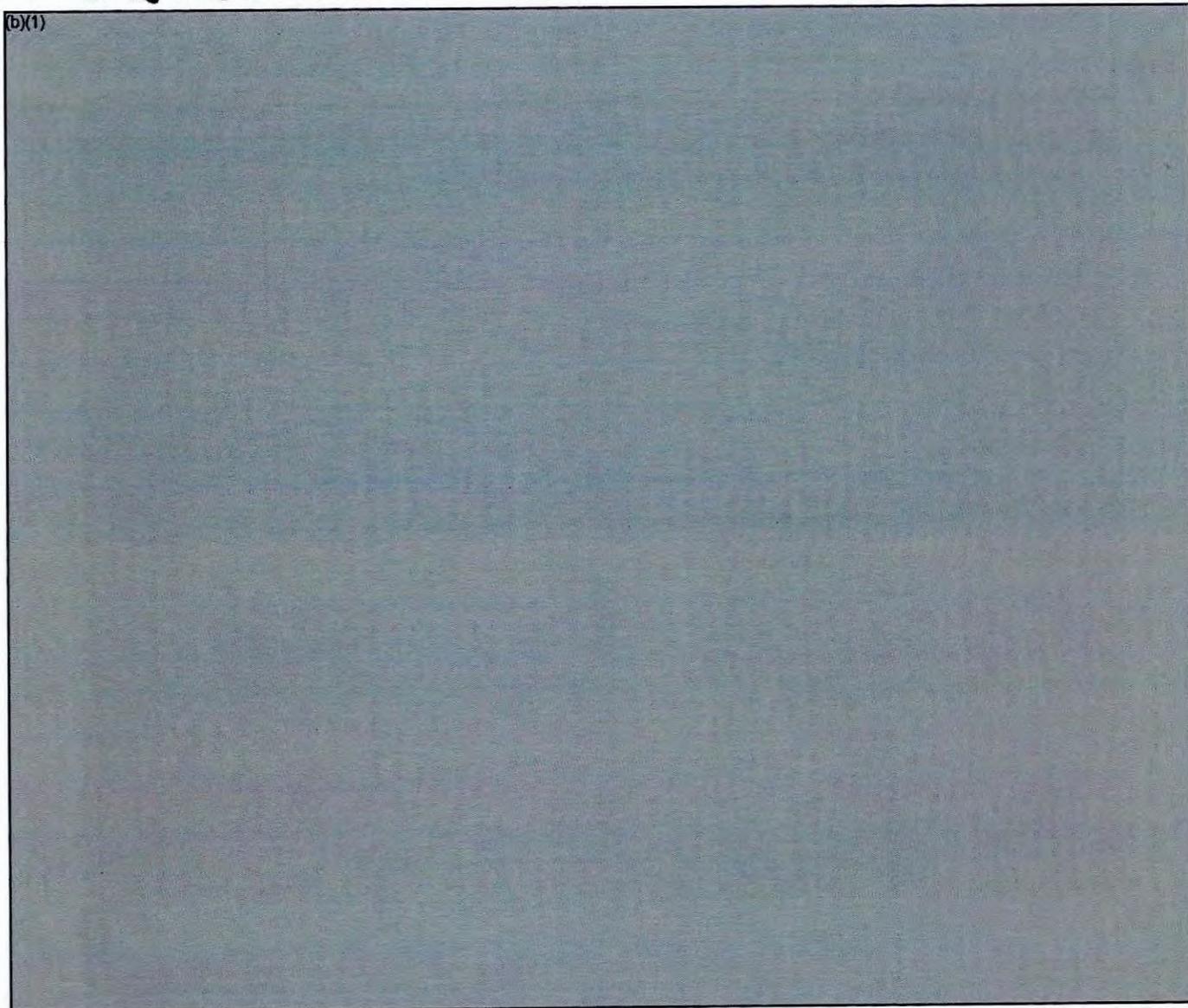
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MILSTAR, December 31, 1995

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

(b)(1)



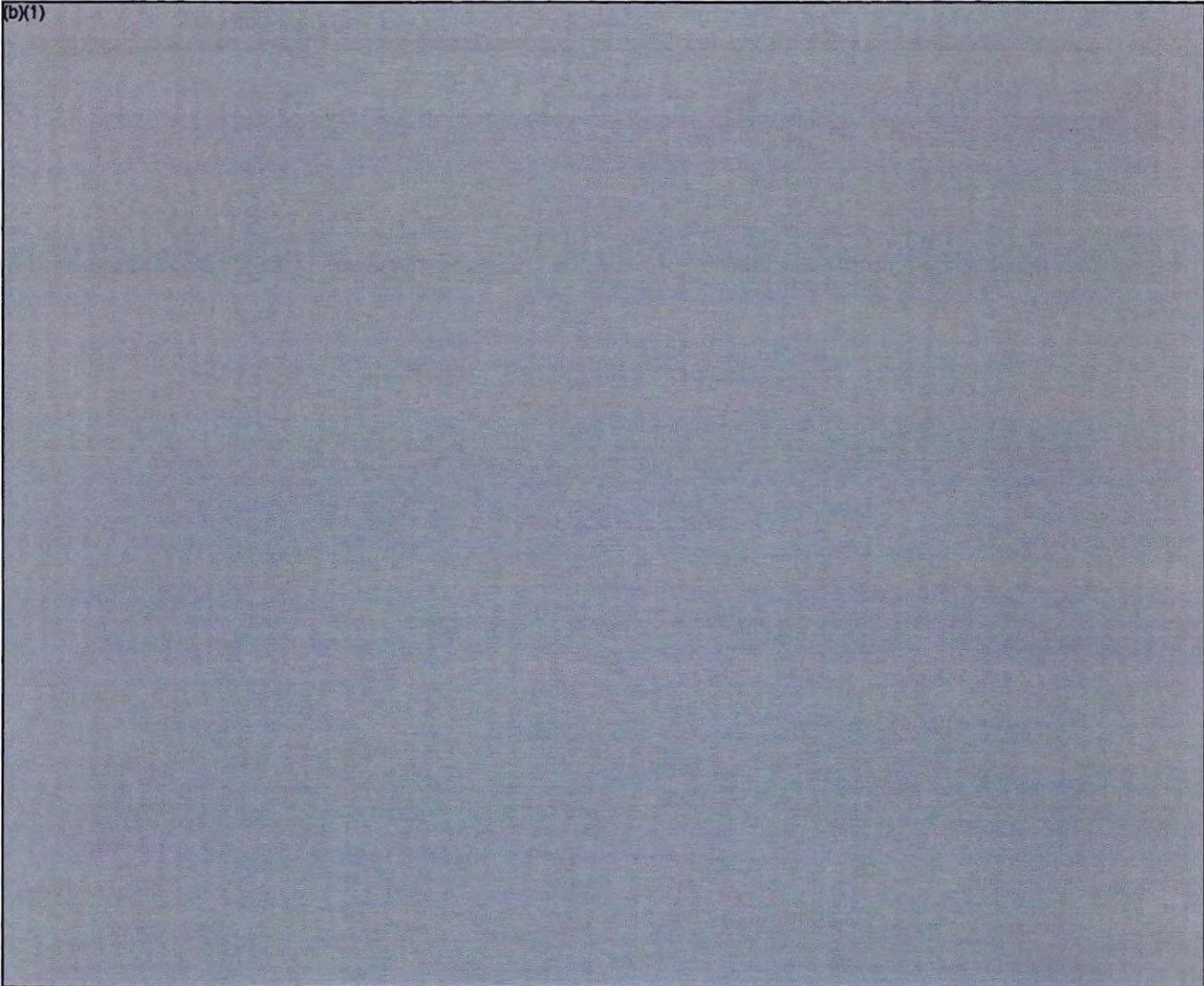
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MILSTAR, December 31, 1995

16b. (U) Program Funding Summary (Cont'd):
Satellites

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16c. (U) Program Funding Summary (Cont'd):
Satellites

c. (U) Annual Summary -- Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-panded	

Appropriation: 3500 Research, Development, Test + Eval, AF

(b)(1)

1993				816.0	915.5	915.5	886.5	2.7
1994				725.1	827.3	827.3	742.5	2.0
1995				499.7	581.2	576.3	413.9	1.9
1996				456.1	541.9	395.6	93.1	2.0
1997				576.9	700.3			2.2
1998				541.5	672.6			2.3
1999				457.1	580.0			2.2
2000				263.9	342.3			2.2
2001				141.9	188.0			2.2
2002				68.6	93.0			2.2
2003				41.2	57.0			2.2
2004				17.5	24.7			2.2
2005				14.5	20.9			2.2
2006				13.5	20.0			2.2
2007				12.3	18.6			2.2
2008				11.1	17.2			2.2

16c. (U) Program Funding Summary (Cont'd):
Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$		Excl Rate (+)
		Nonrec	Rec		Program	Obligated	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2009				9.7	15.3			2.2
2010				8.6	13.8			2.2
2011				6.9	11.3			2.2

(b)(1)

The FY92 line includes FY92 and prior year information.

Expenditure and obligation data (FY94 and prior) reflect program office records as of 04 Oct 95. Expenditure and obligation data (FY95-96) reflect program office records as of 29 Feb 96.

Appropriation: 3080 Other Procurement, Air Force

1992				7.6	8.5	8.5	1.8	3.1
1993				4.2	4.8			2.0
1994				26.1	30.4	28.5	7.8	2.0
1995				0.5	0.6	0.6		1.9
1996				0.7	0.9			2.0
1997				0.5	0.6			2.2
1998				0.3	0.4			2.3
1999				0.1	0.1			2.2
Subtot				40.0	46.3	37.6	9.6	

16c. (U) Program Funding Summary (Cont'd):
Satellites

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

(b)(1)



c. (U) Annual Summary -- CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Oblig- ated	Ex- pended	

Appropriation: 2035 Other Procurement, Army

1992				2.3	2.6	2.6	1.2	3.1
1993				1.3	1.5	1.5	0.4	2.0
1994				0.5	0.6	0.6	0.1	2.0
1995				1.3	1.6	1.6		1.9
Subtot				5.4	6.3	6.3	1.7	
Army				5.4	6.3	6.3	1.7	

Expenditure and obligation data reflect program office records as of
29 Feb 96.

MILSTAR, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1506 Aircraft Procurement, Navy

1992	8		15.5	30.2	34.3	34.3	18.9	2.4
1993	6		11.5	11.9	13.7	13.7	7.5	1.9
1994				0.2	0.2	0.2	0.1	2.0
Subtot	14		27.0	42.3	48.2	48.2	26.5	
Navy	14		27.0	42.3	48.2	48.2	26.5	

Expenditure and obligation data reflect program office records as of 29 Feb 96.

Appropriation: 3600 Research, Development, Test + Eval, AF



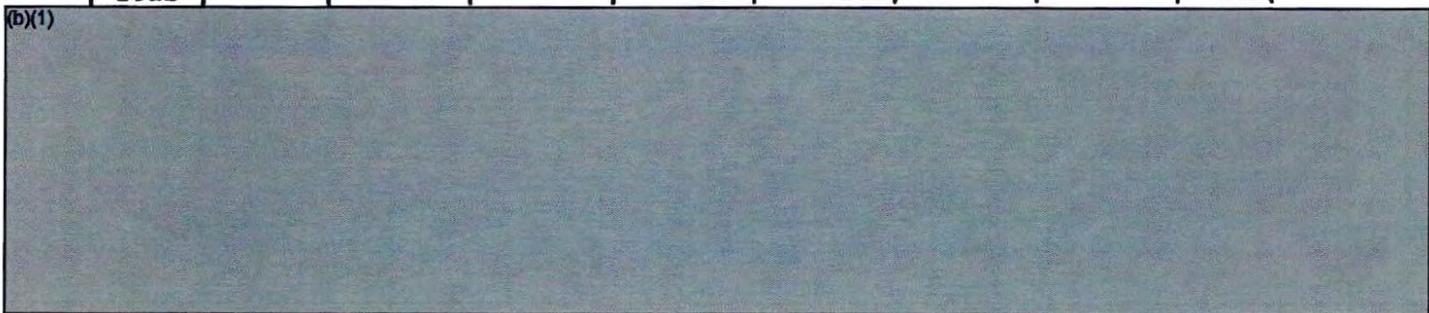
1993				109.2	122.5	122.4	109.5	2.7
1994				66.3	75.7	74.3	46.6	2.0
1995				15.2	17.7	17.2	15.7	1.9
1996				34.5	41.0	21.1	2.7	2.0
1997				14.7	17.8			2.2
1998				10.1	12.6			2.3
1999				6.6	8.4			2.2
2000				4.5	5.8			2.2

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Year\$	Total Than-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 3600 Research, Development, Test + Eval, AF (Cont'd)

2001				3.8	5.0			2.2
2002				0.9	1.2			2.2
2003				0.9	1.2			2.2
2004				0.8	1.2			2.2
2005				0.8	1.2			2.2
2006				0.8	1.2			2.2
2007				0.8	1.2			2.2
2008				0.7	1.1			2.2
2009				0.7	1.1			2.2
2010				0.7	1.1			2.2
2011				0.7	1.1			2.2



Expenditure and obligation data reflect program office records as of 29 Feb 96.

MILSTAR, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Fiscal Year	Qty	Flyaway FY90 Dollars		Total Base Years	Total Then-Year \$			Excl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 3010 Aircraft Procurement, Air Force

1983				0.6	0.5	0.5	0.5	6.0
1984								4.3
1985				10.8	9.6	9.6	9.6	3.1
1986				20.5	18.9	18.9	18.9	3.7
1987	3	3.7	45.3	66.0	63.4	63.4	50.8	4.0
1988	1		8.4	9.1	9.2	9.2	7.7	5.0
1989	4		24.7	42.3	44.1	44.1	32.6	3.3
1990	3	0.6	17.0	42.5	45.7	45.7	24.7	3.2
1991	2	1.9	11.5	14.4	16.1	16.1	14.9	4.1
1992								2.4
1993	1		2.6	14.9	17.2	16.8	7.8	1.9
1994				2.6	3.0			2.0
1995				5.3	6.3	6.0	1.0	1.9
1996				0.6	0.7			2.0
1997				0.2	0.3			2.2
Subtot	14	6.2	109.5	229.8	235.0	230.3	168.5	

FY 83-86 funding reflects the Dual Modem and ARC 171 A/H Radio Upgrades.

MILSTAR, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
CP Terminals

Expenditure and obligation data reflect program office records as of
29 Feb 96.

Appropriation: 3080 Other Procurement, Air Force

1983				1.2	1.0	1.0	1.0	3.9
1984								2.9
1985				12.4	11.0	11.0	11.0	3.4
1986								4.3
1987								3.8
1988								3.7
1989	7		39.1	91.4	94.5	89.7	89.7	3.6
1990	6		48.5	73.2	78.0	73.5	69.0	3.0
1991	17		123.3	180.4	196.8	193.5	186.8	2.6
1992	29		70.0	164.3	184.4	184.4	139.8	3.1
1993				55.6	63.4	62.5	31.3	2.0
1994				33.2	38.7	36.5	20.2	2.0
1995				2.8	3.3	1.9	1.4	1.9
1996				15.7	19.1	5.3	0.2	2.0
1997				6.7	8.3			2.2
1998				2.5	3.2			2.3
1999				5.4	7.0			2.2
2000				4.8	6.4			2.2
2001				5.3	7.2			2.2
Subtot	59		280.9	654.9	722.3	659.3	550.4	

MILSTAR, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):

CP Terminals

Approximately \$29M TY in FY83-95 funding is for Dual Modem and ARC 171 A/H Radio Upgrades.

Expenditure and obligation data reflect program office records as of 29 Feb 96.

Appropriation: 3300 Military Construction, Air Force

1989				4.9	5.0	5.0	5.0	3.7
1990				0.3	0.3	0.3	0.3	5.8
1991				1.9	2.1	2.1	2.1	2.9
1992				11.1	12.4	12.4	12.4	1.9
1993								2.8
1994				1.9	2.2	2.2	2.2	2.0
1995								1.9
1996				0.7	0.8			2.0
Subtot				20.8	22.8	22.0	22.0	

(b)(1)

Expenditure and obligation data reflect program office records as of 29 Feb 96.

17. (U) Production Rate Data:

a. (U) Deliveries to Date --

RDT&E
Procurement

Plan/Actual

- 2/2
0/0

b. (U) Approved Design-to-Cost Objective -- N/A.

MILSTAR, December 31, 1995

17a. (U) Production Rate Data (Cont'd):
CP Terminals

- a. (U) Deliveries to Date --
- | | |
|-------------|-------------|
| EDT&E | Plan/Actual |
| Procurement | 27/27 |
| | 79/79 |
- b. (U) Approved Design-to-Cost Objective -- N/A.

18. (U) Operating and Support Costs:
Satellites

a. (U) Assumptions and Ground Rules --

The Operating & Support (O & S) period covers phase-in to Full Operation Capability (FOC) FY92-99 plus 12 steady state years. This estimate covers the cost of 12 Satellite Mission Control Subsystems in a steady-state condition. The maintenance concept consists of two levels for hardware and software. A constellation consists of four satellites. Support costs are derived from the 25 Aug 92 Program's Cycle Cost Estimate (PLCCE).

There is no antecedent for this system.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Constellation	Avg Annual Cost Per Antecedent
Mission Personnel	17.9	N/A
Unit Level Consumption	2.9	N/A
Depot Maintenance	0.1	N/A
Contractor Support	9.5	N/A
Total	30.4	N/A

c. (U) Contractor Support Costs -- None.

CP Terminals

a. (U) Assumptions and Ground Rules --

Operational requirements are 12 hours per mission for airborne force element terminals, 16 hours per mission for airborne command post

MILSTAR, December 31, 1995

18a. (U) Operating and Support Costs (Cont'd):

CP Terminals

terminals, 24 hours per day for fixed ground terminals, and 12 hours per day for transportable ground terminals. These costs assume 5 years ramp-up and 15 years of steady state operations. The maintenance concept for all command post terminals is two-level. Support costs are derived from the Sep 92 Terminal program office estimate.

There is no antecedent for this system.

b. (U) Costs -- (FY 1990 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per Terminal	Avg Annual Cost Per Antecedent
Mission Personnel	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	0.0	N/A
Indirect Support	0.0	N/A
Total	0.2	N/A

c. (U) Contractor Support Costs -- None.

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SELECTED ACQUISITION REPORT (RCS:DD-COMP(O&A)823)

PROGRAM: AOE 6 SUPPORT SHIP

AS OF DATE: December 31, 1995

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1. Designation and Nomenclature (Preferred Name):

AOE 6 CLASS FAST COMBAT SUPPORT SHIP

2. DoD Component: Navy

3. Responsible Office and Telephone Number:

Program Executive Office, Carriers, CAPT R.E. Williams USN
 Littoral Warfare & Auxiliary Ships Assigned: September 14, 1994
 2531 Jefferson Davis Highway AV 332-3507 COMM (703) 602-3507
 Arlington, VA 22242-5171

4. Program Elements/Procurement Line Items:

RDT&E:

PE 0603564N Project 040B (Shared)
 PE 0604567N Project 0857 (Shared), 1803 (Shared)

SEP 27 1995

PROCUREMENT:

APPN 1611 ICN 5030 (Navy)

MILCON:

PE 0204441N, 0204796N, 0702096N, 0702228N

O & M:

PE 070801N

5. Related Programs:

None.

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 Office of the Secretary
 Naval Facilities Engineering
 Dept. of the Navy

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AOE 6 SUPPORT SHIP, December 31, 1995

6. Mission and Description:

MISSION. The Fast Combat Support Ship operates as an integral part of the Carrier Battle Group providing simultaneous multiproduct underway replenishment by means of connected replenishment (CONREP) and vertical replenishment (VERTREP) using embarked helicopters. The ship delivers on-station munitions, bulk petroleum and oil and lubricants products, and fresh, frozen, and dry provisions to the Carrier Battle Group underway in hostile environments. The ship delivers and receives fleet freight, mail, and personnel to and from combatant forces underway. The ship will be capable of replenishing from six stations simultaneously.

DESCRIPTION. A 156,000 barrel cargo fuel capacity, twin screw, 20+ knots sustained speed, gas turbine geared drive ship, 753'8" in overall length, 107'0" in beam, and with a draft of 38'3". The ship will have the design capacity for 1800 long tons of ammunition, 400 long tons of Chill and Freeze Storage, 250 long tons of other cargo stowage, two H-46 VERTREP helicopters, and will have accommodations for 667 personnel, including crew, detachment personnel, and 38 transient personnel.

7. Program Highlights:

a. Significant Historical Developments --

The AOE 6 Class Program was approved by Navy Decision Coordinating Paper (NDCP) on 20 MAR 86. The lead ship contract for detail design and construction was awarded to National Steel and Shipbuilding Company (NASSCO) on 23 JAN 87. The award was an option-type (one-plus-three), fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option for the first follow ship (AOE 7) was exercised on 3 NOV 88 and for the second (AOE 8) on 6 DEC 89; the third option was allowed to lapse.

As a result of the FY 92 Congressional Budget, the AOE 6 Class Program was reduced from 7 to 4 ships; the FY91 ship (AOE 9) was rescinded and a FY93 ship (AOE 10) was added. A competitive contract for detail design and construction of the AOE 10 was awarded to NASSCO on 15 JAN 93. The award was a fixed price incentive (FPI), subject to escalation, contract (50/50 share). The option to build the AOE 10 Reversing Reduction Gears (RRG) was also exercised with Cincinnati Gear Company on 15 JAN 93. Construction of the AOE 10 commenced on 16 SEP 93.

In MAY 91, the FY91 Dire Emergency Supplemental Appropriations Act provided the AOE 6 Class Program with \$237.0M to complete the three ships under contract at NASSCO. These funds were required to cover cost growth and claims associated with shipbuilder overruns. Due to these additional funds, the Program Acquisition Unit Cost (PAUC) increased by 30% requiring a Nunn-McCurdy Unit Cost Breach Report. On 12 DEC 91, USD(A) certified the AOE 6 program to Congress in order

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AOE 6 SUPPORT SHIP, December 31, 1995

7b. Program Highlights (Cont'd):

This system will satisfy mission requirements.

c. Changes Since As Of Date -- None.

8. Threshold Breaches:

There are no breaches to the Approved Program Baseline (APB) dated 8 APR 93 and no Nunn-McCurdy unit cost breaches.

9. Schedule:

a. Milestones --

	<u>Production</u> <u>Estimate</u>	<u>Approved</u> <u>Program</u>	<u>Current</u> <u>Estimate</u>
Operational Requirement (OR)	JUL 82	JUL 82	JUL 82
Ship Characteristics Imp. Board (SCIB)	JUL 83	JUL 83	JUL 83
Characteristics Approved	OCT 84	OCT 84	OCT 84
Production Decision	MAR 86	MAR 86	MAR 86
Production Contract Award	JAN 87	JAN 87	JAN 87
Production Started - 1st Ship	JUN 88	JUN 88	JUN 88
Follow-On Production Decision	NOV 88	NOV 88	NOV 88
Exercise Option (AOE 7)	N/A	NOV 88	NOV 88
Exercise Option (AOE 8)	N/A	DEC 89	DEC 89
Launch - 1st Ship	FEB 90	OCT 90	OCT 90
Acceptance Trials - 1st Ship	MAR 91	AUG 93	DEC 93
Delivery - 1st Ship	APR 91	OCT 93	JAN 94
Organic Support Capability Date	N/A	NOV 94	FEB 95
Service Depot Support Date	N/A	NOV 94	FEB 95
Initial Operational Capability	AUG 91	FEB 95	JUN 95 (Ch-1)
Last AOE Delivery	FEB 98	DEC 04	MAR 98 (Ch-2)

b. Previous Change Explanations --

ACCEPTANCE TRIALS - 1ST SHIP: The delay from JUL 91 to SEP 91 was attributable to a delay in launch, late receipt of main reduction gear, and concurrent propulsion testing. The delay from SEP 91 to JUN 92 was due to NASSCO production inefficiencies and late delivery of Reversing Reduction Gears (RRG). The delay from JUN 92 to DEC 92 was driven by NASSCO's production inefficiencies and late delivery of RRG. The delay from DEC 92 to FEB 93 was caused by continued NASSCO production inefficiencies and reprogramming resulting from claims settlement. The delay from FEB 93 to AUG 93 was due to the 25-day general labor strike and the status of remaining production and engineering work. The delay from AUG 93 to OCT 93 was a result of high rates of rework and labor unrest. The delay from OCT 93 to DEC 93 was caused by the need to reconduct Builder's Sea Trials.

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AOE 6 SUPPORT SHIP, December 31, 1995

9b. Schedule (Cont'd):

DELIVERY - 1ST SHIP: The delay from AUG 91 to NOV 91 resulted from the delay in Acceptance Trials. The delay from NOV 91 to SEP 92 was due to NASSCO production inefficiencies and late delivery of RRG. The delay from SEP 92 to FEB 93 was caused by the delay in Acceptance Trials. The delay from FEB 93 to APR 93 was attributable to NASSCO's production inefficiencies and reprogramming resulting from late receipt of RRG, which led to an extension of the contract delivery date as a part of claims settlement. The delay from APR 93 to OCT 93 was due to the delay in Acceptance Trials. The delay from OCT 93 to JAN 94 was also driven by the delay in Acceptance Trials.

INITIAL OPERATIONAL CAPABILITY: The delay from NOV 91 to JAN 92 was due to the change in the fitting out period which was caused by a delay in delivery. The delay from JAN 92 to OCT 92 was caused by an additional delay in delivery of the first ship. The delay from OCT 92 to APR 93 was due to the change in the fitting out period caused by a delay in delivery. The delay from APR 93 to MAY 93 resulted from a change in the fitting out period caused by a change in delivery. The delay from MAY 93 to FEB 95 was caused by further delay in delivery of the AOE 6. The delay from NOV 93 to FEB 95 was also driven by the delay in the lead ship (AOE 6) delivery.

LAST AOE DELIVERY: The delay from FEB 98 to APR 99 was due to large lot buy-out in FY 93. The change from APR 99 to NOV 96 was a result of the reduction of production from seven to four ships. The delay from NOV 96 to APR 97 was caused by the delay in the AOE 10 anticipated contract award. The delay from APR 97 to OCT 04 was caused by the addition of a sixth ship in the outyears. The change from DEC 04 to OCT 97 was attributable to the reduction of the program from six to four ships.

c. Current Change Explanations --

(CH-1) INITIAL OPERATIONAL CAPABILITY: The delay from FEB 95 to JUN 95 was attributable to the delay in AOE 6 delivery.

(CH-2) LAST SHIP DELIVERY: The delay in the delivery date from OCT 97 to MAR 98 is due to contractor production inefficiencies and manning insufficient to maintain the current production schedule.

d. References --

Production Estimate:

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

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9d. Schedule (Cont'd):

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

10. Performance Characteristics:

a. Performance --	<u>PdE</u>	<u>Approved Program Objective/Threshold</u>	<u>Demonstrated Perf</u>	<u>Current Estimate</u>
Length Overall (ft)	753'8"	753'8" / 753'8"	753'8"	753'8"
Beam (maximum) (ft)	107'0"	107'0" / 107'0"	107'0"	107'0"
Draft (mean) (ft)	37'9"	38'3" / 38'3"	38'3"	38'3"
Displacement (long tons)	48500	48998 / 48998	48998	48998
<u>Propulsion</u>				
Gas Turbines	4	4 / 4	4	4
Shafts	2	2 / 2	2	2
Shaft Horsepower	100000	100000 / 100000	100000	100000
Accommodations	667	667 / 667	667	667
Speed (kts)	20+	20+ / 20+	20+	20+
<u>Armament</u>				
NSSMS	1	1 / 1	1	1
CIWS	2	2 / 2	2	2
25mm Guns	2	2 / 2	2	2
.50 Cal Guns	4	4 / 4	4	4
Cargo Fuel Cap. (bbls)	156000	156000 / 156000	156000	156000
DFM-JP5-Conv. (#)	30-40-30	30-40-30 / 30-40-30	30-40-30	30-40-30
Ordnance Storage (long tons)	1800	1800 / 1800	1800	1800
Chill & Freeze (long tons)	400	400 / 400	400	400
Other Cargo (long tons)	250	250 / 250	250	250
H-46 Helo (UNREP)	2	2 / 2	2	2

b. Previous Change Explanations -- None.

c. Current Change Explanations -- None.

d. References --

Production Estimate:

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

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AOE 6 SUPPORT SHIP, December 31, 1995

11. Total Program Cost and Quantity (Current Dollars in Millions):

a. Cost --	Production <u>Estimate</u>	Approved <u>Program</u>	Current <u>Estimate</u>
Development (RDT&E)	29.4	35.2	31.2
Procurement	2303.1	2859.8	1930.0
Ship Construction	(2230.6)		(0.0)
OF/PD	(72.5)		(0.0)
Post Delivery			(29.1)
Outfitting			(49.4)
Ship Construction			(1851.5)
Total Sailaway	(2303.1)		(1930.0)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(0.0)		(0.0)
Construction (MILCON)	0.0	124.2	84.7
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.4</u>
Total FY 86 Base-Year \$	2332.5	3019.2	2046.3
Escalation	502.3	735.2	370.3
Development (RDT&E)	(-0.6)	(1.3)	(-0.3)
Procurement	(502.9)	(673.8)	(337.4)
Construction (MILCON)	(0.0)	(59.6)	(33.1)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.5)</u>	<u>(0.1)</u>
Total Then-Year \$	2834.8	3754.4	2416.6
b. Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>7</u>	<u>6</u>	<u>4</u>
Total	7	6	4

c. Foreign Military Sales/International Cooperative Programs -- None.

d. Nuclear Costs -- None.

e. References --

Production Estimate:

NDCP Approved March 20, 1986: Lead Ship Production

DCP Approved May 25, 1989: Follow Ship Production

Approved Program:

NAE Approved Acquisition Program Baseline dated April 08, 1993.

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AOE 6 SUPPORT SHIP, December 31, 1995

12. Unit Cost Summary:

	<u>Current</u> <u>Estimate</u> (DEC 95 SAR)	<u>UCR</u> <u>Baseline</u> (APR 93 APB)	<u>Percent</u> <u>Change</u>
a. Total Program			
(1) Cost (BY86\$)	2046.3	3019.2	
(2) Quantity	4	6	
(3) Unit Cost	511.58	503.20	1.66
b. Procurement			
(1) Cost (BY86\$)	1930.0	2859.8	
(2) Quantity	4	6	
(3) Unit Cost	482.50	476.63	1.23

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AOE 6 SUPPORT SHIP, December 31, 1995

13. Cost Variance Analysis:

a. Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	28.8	2806.0	0.0	0.0	2834.8
Previous Changes:					
Economic	-	+72.8	-2.8	-	+70.0
Quantity	-	-1222.3	-	-	-1222.3
Schedule	-	+70.5	-	-	+70.5
Engineering	-	-	-	-	-
Estimating	+2.1	+524.8	+64.9	+0.5	+592.3
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+2.1	-554.2	+62.1	+0.5	-489.5
Current Changes:					
Economic	0.1	1.5	-0.9	-	+0.7
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-0.1	14.1	56.6	-	+70.6
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+15.6	+55.7	-	+71.3
Total Changes	+2.1	-538.6	+117.8	+0.5	-418.2
Current Estimate	30.9	2267.4	117.8	0.5	2416.6

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AOE 6 SUPPORT SHIP, December 31, 1995

13a. Cost Variance Analysis (Cont'd):

a. Summary (FY 1986 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	O&M	TOTAL
Production Estimate	29.4	2303.1	0.0	0.0	2332.5
Previous Changes:					
Quantity	-	-865.3	-	-	-865.3
Schedule	-	+56.6	-	-	+56.6
Engineering	-	-	-	-	-
Estimating	+1.8	+424.9	+46.3	+0.4	+473.4
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	+1.8	-383.8	+46.3	+0.4	-335.3
Current Changes:					
Quantity	-	-	-	-	-
Schedule	-	-	-	-	-
Engineering	-	-	-	-	-
Estimating	-	10.7	38.4	-	+49.1
Other	-	-	-	-	-
Support	-	-	-	-	-
Subtotal	-	+10.7	+38.4	-	+49.1
Total Changes	+1.8	-373.1	+84.7	+0.4	-286.2
Current Estimate	31.2	1930.0	84.7	0.4	2046.3

b. Previous Change Explanations --

RDT&E

Economic: Revised economic escalation indices.

Estimating: Increase in engineering development costs; Current and prior inflation offset; Revised engineering development costs for AOE 10 ship contract design; Revised estimate to complete contract design.

Procurement

Economic: Revised economic escalation indices; Economic adjustment for negative program change.

Quantity: Change in program: 7 to 4 ships; 4 to 6 ships.

Schedule: Change in acquisition strategy: from 1-1-0 to 1-0-1 (FY90 to FY92).

13b. Cost Variance Analysis (Cont'd):

Estimating: Repricing based on prior year ship costs; Current and prior inflation offset; Congressional reductions to FY 1992 program; Reclassification of support variance to estimating variance to reflect outfitting and post delivery as sailaway.

Support: Decrease in estimated outfitting and material costs; Increase in outfitting material costs and post delivery allowance for shock tests; Reclassification of support variance to estimating variance to reflect outfitting and post delivery as sailaway.

MILCON

Economic: Revised economic escalation indices; Economic adjustment for negative program change.

Estimating: Addition of homeport requirements; Current and prior inflation offset; Revised homeport requirements estimate.

O & M

Estimating: MILCON Planning/Design and Site Survey Studies.

c. Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+0.1
Adjustment for Current and Prior Inflation. (Estimating)	--	-0.1
	---	---
RDT&E Subtotal	--	--
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	+1.5
Adjustment for Current and Prior Inflation. (Estimating)	-1.8	-2.1
Revised program estimate as a result of repricing based on prior year ship costs. (Estimating)	+12.5	+16.2
	---	---
Procurement Subtotal	+10.7	+15.6
(3) <u>MILCON</u>		
Revised escalation indices. (Economic)	N/A	-0.9

13c. Cost Variance Analysis (Cont'd):

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current and Prior Inflation. (Estimating)	+0.2	+0.4
Revised homeport requirements estimate. (Estimating)	+38.2	+56.2
 MILCON Subtotal	<u>+38.4</u>	<u>+55.7</u>

14. Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions):

Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
404.97	17.68	-1.85	17.63	--	165.73	--	--	199.19	604.15

15. Contract Information (Then-Year Dollars in Millions):

a. Procurement --	Initial Contract Price		
<u>AOE 10:</u>	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
NASSCO, San Diego, CA			
N00024-93-C-2303, FPI	\$358.4	\$414.3	1
Award: January 15, 1993			
Definitized: January 15, 1993			

	Current Contract Price			Estimated Price At Completion	
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
	\$364.7	\$421.7	1	\$348.7	\$383.1
				<u>Cost Variance</u>	<u>Schedule Variance</u>
Previous Cumulative Variances				\$-0.6	\$11.0
Cumulative Variances To Date (12/03/95)				<u>\$-10.8</u>	<u>\$-9.2</u>
Net Change				\$-10.2	\$-20.9

Explanation of Change:

The Negative Cost and Schedule Variances are due to production inefficiencies and manning insufficient to maintain the current production schedule.

The major driver of the Negative variances are in the Production Labor and associated Overhead.

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AOE 6 SUPPORT SHIP, December 31, 1995

15. Contract Information (Cont'd):

The Program Manager's current estimate at completion of \$383.1M is derived by utilizing historic performance and current trends to project the cost of work remaining. This methodology is applied at the functional level and added to the Actual Costs of Work Performed, (ACWP).

16. Program Funding Summary (Current Estimate in Millions of Dollars):

a. Program Status --

- (1) Percent Program Completed: 75.0% (15 yrs/20 yrs)
- (2) Percent Program Cost Appropriated: 96.8% (\$2339.1 / \$2416.6)

b. Appropriation Summary (Then-Year Dollars in Millions)

<u>Appropriation</u>	<u>Prior Years</u> (FY82-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2001)	<u>Total</u>
RDT&E	30.9	-	-	-	30.9
Procurement	2239.3	5.9	0.4	21.8	2267.4
MILCON	45.2	17.3	-	55.3	117.8
O&M	0.5	-	-	-	0.5
Total	2315.9	23.2	0.4	77.1	2416.6

c. Annual Summary --

<u>Fiscal Year</u>	<u>Qty</u>	<u>Flyaway FY86 Dollars</u>		<u>Total Base Year\$</u>	<u>Total Then-Year \$</u>			<u>Escl Rate (%)</u>
		<u>Nonrec</u>	<u>Rec</u>		<u>Program</u>	<u>Obligated</u>	<u>Ex-pended</u>	

Appropriation: 1319 Research, Development, Test + Eval, Navy

1982				2.7	2.4	2.4	2.4	7.6
1983				4.0	3.7	3.7	3.7	4.9
1984				7.9	7.6	7.6	7.6	3.8

(UNCLASSIFIED)

AOE 6 SUPPORT SHIP, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 1319 Research, Development, Test + Eval, Navy (Cont'd)

1985				7.7	7.6	7.6	7.6	3.4
1986				4.5	4.6	4.6	4.6	2.8
1987				1.5	1.6	1.6	1.6	2.7
1988				0.1	0.1	0.1	0.1	3.0
1989								4.2
1990				0.9	1.0	1.0	1.0	4.0
1991				1.6	1.9	1.9	1.9	4.3
1992				0.3	0.4	0.1	0.1	2.8
Subtot				31.2	30.9	30.6	30.6	

Appropriation: 1611 Shipbuilding and Conversion, Navy

1987	1		642.6	556.8	603.2	586.5	577.7	1.5
1988								2.6
1989	1		423.7	349.2	401.3	374.1	358.2	3.3
1990	1		419.3	337.2	398.8	381.4	300.4	1.1
1991				195.4	238.0	227.0	219.7	1.6
1992				167.4	210.0	209.8	209.2	2.5
1993	1		444.4	288.1	366.2	324.5	146.9	3.2

(UNCLASSIFIED)

(UNCLASSIFIED)

AOE 6 SUPPORT SHIP, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1611 Shipbuilding and Conversion, Navy (Cont'd)

1994				11.2	14.8	11.8	9.1	4.2
1995				5.2	7.0	5.0	3.8	3.8
1996				4.3	5.9	3.9	1.0	2.0
1997				0.3	0.4			2.2
1998				5.1	7.4			2.2
1999				9.8	14.4			2.3
Subtot	4		1930.0	1930.0	2267.4	2124.0	1826.0	

Appropriation: 1205 Military Construction, Navy

1991				16.1	20.0	13.8	13.3	4.3
1992				12.7	16.2	14.6	12.7	2.8
1993				0.9	1.2	1.2	1.2	2.7
1994								2.0
1995				5.7	7.8	6.5	0.5	1.9
1996				12.4	17.3			2.0
1997								2.2
1998								2.2
1999				30.8	45.8			2.3

(UNCLASSIFIED)

AOE 6 SUPPORT SHIP, December 31, 1995

16c. Program Funding Summary (Cont'd):

Fiscal Year	Qty	Flyaway FY86 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 1205 Military Construction, Navy (Cont'd)

2000								2.2
2001				6.1	9.5			2.2
Subtot				84.7	117.8	36.1	27.7	

Appropriation: 1804 Operation and Maintenance, Navy

1990				0.4	0.5	0.5	0.5	4.0
Subtot				0.4	0.5	0.5	0.5	
Grand Total	4		1930.0	2046.3	2416.6	2191.2	1884.8	

17. Production Rate Data:

a. Deliveries to Date --

RDT&E	Plan/Actual
Procurement	0/0
	3/3

b. Approved Design-to-Cost Objective -- N/A.

18. Operating and Support Costs:

a. Assumptions and Ground Rules --

The AOE 6 Class Fast Combat Support Ship is designed to operate independently or as a unit of an underway replenishment group, furnishing petroleum/oil/lubricant products and fresh, frozen, and dry provisions to operating forces. The O&S costs associated with this ship class are based on a useful life of 30 years. Ship design

(UNCLASSIFIED)

AOE 6 SUPPORT SHIP, December 31, 1995

18a. Operating and Support Costs (Cont'd):

parameters indicate that each ship will consume about 110,900 BBL of fuel each year.

Direct personnel costs involve the annual cost for the embarked crew. Retirement and PCS costs are accounted for in Indirect Costs. Direct operating costs include the cost of fuel, repair parts, supplies, training expendable stores, and purchased services. Direct maintenance includes Intermediate and Depot Level Maintenance. Indirect costs include training, publications, ammunition handling, engineering/technical services support, retirement costs, and crew PCS costs. The baseline AOE 1 and AOE 6 Class Operating and Support estimate is the VAMOSC actuals for the per ship average by class for the AOE 1-4 in constant FY86 dollars.

b. Costs -- (FY 1986 Constant (Base-Year) Dollars in Millions)

Cost Element	Avg Annual Cost Per AOE 6 Class	Avg Annual Cost Per AOE 1 Class
Direct Personnel	10.0	10.2
Direct Operations	7.3	7.5
Direct Maintenance	8.9	8.9
Indirect Costs	4.3	4.3
Total	30.5	30.9

c. Contractor Support Costs -- None.

SELECTED ACQUISITION REPORT (RCS:DD-COMP (O&A) 823)
PROGRAM: LONGBOW APACHE

AS OF DATE: December 31, 1995

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1. (U) Designation and Nomenclature (Preferred Name):
LONGBOW APACHE

2. (U) DoD Component: Army

3. (U) Responsible Office and Telephone Number:
ATTN: SFAE-AV-AAH COL STEPHEN G. KEE
4300 GOODFELLOW BOULEVARD Assigned: October 20, 1995
ST. LOUIS, MO 63120-1798 AV 693-1992 COMM 314-263-1992

4. (U) Program Elements/Procurement Line Items:

RDT&E:
PE 23744 Project D423
PE 63776 Project D472
PE 64816 Project DC27, DC31, DC87, D2DT

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FOR OPEN PUBLICATION
AS AMENDED
MAR 29 1996 12

DIRECTORATE FOR FREEDOM OF INFORMATION
AND SECURITY REVIEW (OASD-PA)
DEPARTMENT OF DEFENSE

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~~Declassify on [redacted]~~
~~Authority [redacted]~~

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96-C-0457

LONGBOW APACHE, December 31, 1995

4. (U) Program Elements/Procurement Line Items (Cont'd):

PROCUREMENT:

APPN 2031 ICN AA0978 (Army)
APPN 2031 ICN AA6605 (Army)
APPN 2031 ICN AA6607 (Army)
APPN 2031 ICN AA6608 (Army)

5. (U) Related Programs:

AH-64 Apache, Hellfire Modular Missile System (HMMS), and Longbow Hellfire.

6. (U) Mission and Description:

The Longbow consists of a mast-mounted Fire Control Radar (FCR) that will be integrated into the AH-64 airframe and a Radio Frequency (RF) autonomous seeker in an upgraded Hellfire missile (Longbow Hellfire). Longbow will provide the AH-64 with a true fire-and-forget capability, greatly increasing weapon system effectiveness and aircraft survivability. The weapon system will be employable day or night, in adverse weather and in obscurants. Hellfire must effectively engage and destroy advanced threat armor on the Air-Land Battlefield of the late 1990's and into the next century. To be effective and survive on this future battlefield, the attack helicopter team must rapidly engage multiple targets with minimum exposure time and deploy a system that is inherently resistant to threat countermeasures. A total of 227 aircraft will be modified with all of the Longbow improvements including the FCR and the 701-C engine integrated onto an AH-64 airframe. An additional 531 aircraft will be modified to incorporate all of the Longbow improvements except the FCR and the 701-C engines.

7. (U) Program Highlights:

a. (U) Significant Historical Developments --

The Longbow program evolved from the Helicopter Adverse Weather Target Acquisition and Designation System (HAWTADS) activity initiated in 1978, which led to the Helicopter Adverse Weather Fire Control and Acquisition Radar (HAWFCAR) program. Martin Marietta Corporation (MMC) and Westinghouse Electric Corporation (WEC) were awarded parallel competitive technology demonstration contracts for an RF Fire Control Radar to be integrated and tested on the AH-64 Apache. In 1981, an RF Seeker for Hellfire was added, yielding a total system approach for Apache. In 1982, WEC and MMC were awarded parallel competitive contracts for the first phase, Critical Technology Demonstration (CTD).

Following the August 1985 Milestone I In-Process Review (IPR), a Joint Venture (JV) contract was awarded in November 1985 to MMC and WEC for tactical Longbow preliminary design. In August 1986, a Proof of Principle demonstration contract was awarded to the JV.

Longbow Apache, December 31, 1995

7a. (U) Program Highlights (Cont'd):

Concurrently, the engineering development program was approved in the Army Acquisition Decision Memorandum (ADM) date July 20, 1989. This decision authorized integration of the Longbow Fire Control Radar onto four AH-64 prototype airframes.

In December 1990, an ADM was signed by the DAE to approve entry into Full Scale Development (FSD). In June 1991, the DAB directed that the Fire Control Radar, airframe, and missile contract efforts be aligned.

The Longbow prototype AH-64D aircraft, without a tactical Fire Control Radar, successfully completed its first flight in April 1992.

An Acquisition Program Baseline was signed in May 1993 to include an AH-64D model without the Fire Control Radar; that model will not include the 701-C engine.

In 1993, the Preliminary Airworthiness Evaluation and the Fire Control Radar Hardware and Software Critical Design Reviews were successfully completed. An AH-64D with an operating Fire Control Radar flew for the first time in August 1993.

In 1994, the program accomplishments included the FCR Built In Test Demonstration (June); AH-64D Logistics Demonstration and Conversion Demonstration (June); FCR Contractor Mode Performance Demonstration (June); the final Production Readiness Review supporting long lead production (August); FCR Countermeasures tower testing (September); Force Development Test and Experimentation (December); and Pre-Production Qualification Testing (December).

A successful Long Lead In-Process Review (IPR) was conducted for the Conventional Systems Committee (CSC) on October 5, 1994. This IPR resulted in approval for the Longbow aircraft and Fire Control Radar to obligate FY 95 Advance Procurement Funds, contingent upon Joint Requirements Oversight Council (JROC) approval of Longbow requirements. The JROC validated the revised key performance parameters on October 27, 1994. The Acquisition Decision Memorandum for long lead procurement was signed November 16, 1994. The Longbow long lead advance procurement contracts were signed with McDonnell Douglas Helicopter Systems and the Joint Venture in December 1994.

b. (U) Significant Developments Since Last Report --
The Gunnery Phase of Initial Operational Test and Evaluation (IOT&E) was successfully completed in February 1995. The final phase of IOT&E (Force-on-Force) was completed in March 1995. Longbow aircraft flew approximately 430 hours in IOT&E and fought against

LONGBOW APACHE, December 31, 1995

7b. (U) Program Highlights (Cont'd):

the heaviest air defense threat and opposing force countermeasures used in any attack helicopter test in history. More than 1,000 personnel participated, making the Longbow IOT&E the largest operational test conducted by the U.S. Army in several years. Longbow displayed outstanding levels of lethality, survivability, and suitability.

Longbow Live Fire Test & Evaluation efforts were begun in April and successfully completed in July 1995.

The Under Secretary of Defense for Acquisition and Technology USD(A&T) convened a Defense Acquisition Board Readiness Meeting for the AH-64D Longbow on October 13, 1995. At that meeting, the USD(A&T) waived the requirement for a formal Milestone III and provided approval for the AH-64D to enter the production phase. The Acquisition Decision Memorandum was signed on October 18, 1995.

The Longbow Apache system is expected to satisfy mission requirements.

c. (U) Changes Since As Of Date --

A Not-To-Exceed Undefined Contract Action was awarded for Lot 1 of the Fire Control Radar on March 4, 1996.

8. (U) Threshold Breaches:

There are no breaches to the approved Acquisition Program Baseline dated November 27, 1995. The Fire Control Radar (FCR) end item has an Average Unit Procurement Cost Nunn-McCurdy breach which exceeds 15 percent. Official breach determination and notification correspondence was forwarded to the DoD and Congressional leadership in early March as required. Sections 12c-m contain additional details about the FCR unit cost breach.

9. (U) Schedule:

Airframe Modifications

a. (U) Milestones --

	Development <u>Estimate</u>	Approved <u>Program PdE</u>	Current <u>Estimate</u>
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Prelimin Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
LBA Phase I Contract Award	AUG 88	AUG 88	AUG 88
Milestone IB (DAB)	JUL 89	JUL 89	JUL 89

LONGBOW APACHE, December 31, 1995

9a. (U) Schedule (Cont'd):
Airframe Modifications

(U) Milestones (Cont'd) --	Development <u>Estimate</u>	Approved <u>Program; PdE</u>	Current <u>Estimate</u>
LBA Phase 2 Contract Award	AUG 89	AUG 89	AUG 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Dev Test/Early User Test and Eval			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV (DAB)	DEC 90	DEC 90	DEC 90
Full Scale Development Contract Award	DEC 90	DEC 90	DEC 90
Verification of Apache Action Tm Fixes			
Start	SEP 91	APR 91	APR 91
Complete	MAR 92	JUL 91	JUL 91
LBA Force Develop Test and Experimentation			
Start	APR 92	N/A	N/A
Complete	SEP 92	N/A	N/A
First Flight of Prototype w/o Longbow	APR 92	APR 92	APR 92
Prelim Airworthiness Eval			
Start	JAN 93	MAR 93	MAR 93
Complete	MAR 93	AUG 93	JUN 93
LBA Initial Prod Readiness Rev	JUL 92	JUL 92	JUL 92
First Flight w/ Longbow	AUG 93	AUG 93	AUG 93
Component Qualification	DEC 93	JUN 94	DEC 93
LBA Long Lead IPR	JAN 94	OCT 94	OCT 94
First Flight (AH-64D w/o FCR)	N/A	JAN 94	JAN 94
Long Lead Time Items Contract Award	APR 94	DEC 94	DEC 94
Development Test			
Start	JUL 94	JUL 94	JUL 94
Complete	SEP 94	SEP 94	SEP 94
Force Dev Test and Experimentation			
Start	OCT 94	OCT 94	OCT 94
Complete	NOV 94	NOV 94	NOV 94
Production Readiness Review	DEC 94	JUN 95	JUN 95
IOT&E			
Start	JAN 95	JAN 95	JAN 95
Complete	MAR 95	MAR 95	MAR 95
Milestone III (DAB)	NOV 95	OCT 95	OCT 95
Lot 1 Contract Award	NOV 95	NOV 95	DEC 95 (Ch-1)
First Production Delivery (LBA & FCR)	APR 96	MAR 97	MAR 97
Full Rate Production Contract Award (LBA & FCR)	NOV 96	N/A	N/A
Full Rate Production Conversion Award (LBA)	NOV 96	N/A	N/A

Longbow Apache, December 31, 1995

9a. (U) Schedule (Cont'd):
Airframe Modifications

(U) Milestones (Cont'd) --	<u>Development Estimate</u>	<u>Approved Program;PdE</u>	<u>Current Estimate</u>
First Unit Equipped	FEB 97	OCT 97	OCT 97
Organic Spt for Intermed Level of Repair	FEB 97	N/A	OCT 97
IOC	APR 97	SEP 98	DEC 97
Reliability Maturation Program Review	DEC 99	N/A	AUG 00
Organic Spt for Depot Level of Repair	APR 00	DEC 00	DEC 00

b. (U) Previous Change Explanations --

Production milestones were delayed due to budget decrements and DAB decision to eliminate program concurrency. Verification of Apache Action Team Fixes was expected to start in September 1991 but actually started in April 1991; the completion date was originally March 1992, but completion occurred in July 1991. Force Development Test and Experimentation Phase I is not required and was removed from the Approved Program Milestones; the Force Development Data Collection Effort (completed in November 1992) provided the same end result: the development of tactics, techniques, and procedures. The First Production Delivery date was changed from Jun 97 to Mar 97 to reflect delivery of the separate end items rather than the integrated aircraft. Full Rate Production Contract Award dates were changed from Nov 97 to N/A because Low Rate and Full Rate arrangements were eliminated; a milestone was added for the Lot 1 Contract Award.

c. (U) Current Change Explanations --

(Ch-1) The Lot 1 Contract Award date is changed from Nov 95 to Dec 95 to reflect the actual date.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program;PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

LONGBOW APACHE, December 31, 1995

9d. (U) Schedule (Cont'd):
Fire Control Radar

a. (U) Milestones --	<u>Development</u> <u>Estimate</u>	<u>Approved</u> <u>Program;PdE</u>	<u>Current</u> <u>Estimate</u>
Milestone I In Process Review	AUG 85	AUG 85	AUG 85
Preliminary Design Contract Award	NOV 85	NOV 85	NOV 85
Contract Award (Proof of Principle)	AUG 86	AUG 86	AUG 86
Milestone IB DAB	JUL 89	JUL 89	JUL 89
IDP Contract Award	SEP 89	SEP 89	SEP 89
Development Test/Early User Test & Experimentation			
Start	FEB 90	FEB 90	FEB 90
Complete	APR 90	APR 90	APR 90
Milestone II/IV	DEC 90	DEC 90	DEC 90
Full Scale Development Award	DEC 90	DEC 90	DEC 90
Long Lead Time Items Contract Award	NOV 94	NOV 94	DEC 94
Lot 1 Contract Award	NOV 95	NOV 95	MAR 96 (Ch-1)
First Production Delivery	APR 96	FEB 97	MAR 97
Organic Support for Depot Level of Repair	N/A	DEC 02	DEC 02 (Ch-2)

b. (U) Previous Change Explanations --

The Long Lead Time Items Contract Award date was changed from Nov 94 to Dec 94 to reflect the actual contract award date. The First Production Delivery date was changed from Jun 97 to Mar 97 to reflect delivery of the separate end items rather than the integrated aircraft.

c. (U) Current Change Explanations --

(Ch-1) The Lot 1 Contract Award date is changed from Nov 95 to Mar 96 to reflect the actual date.

(Ch-2) The Organic Support for Depot Level of Repair milestone was added to the Acquisition Program Baseline (dated November 27, 1995).

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated March 8, 1991.

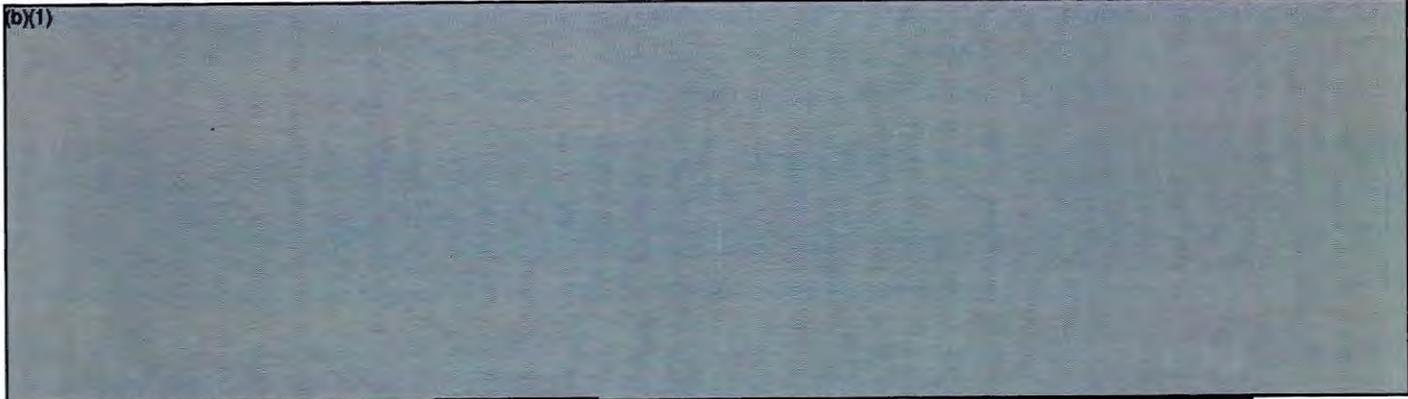
(U) Approved Program;PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

10. (U) Performance Characteristics:

Airframe Modifications

a. (U) Performance --	DE	Approved Program; PdE Objective/Threshold		Demonstrated Perf	Current Estimate	
Vertical Rate of Climb for AH-64D with FCR Mission Kit (ft/min)	850	450	/ 450	705	450	(Ch-1)
Cruise Speed (primary mission config) (knots)	145	N/A	/ N/A	TBD	145	
Primary Mission Endurance (hrs)	1.83	N/A	/ N/A	1.83	1.83	
Alternate Mission Endurance with full fuel (hrs, sea level, standard)	2.5	N/A	/ N/A	N/A	N/A	
Ordnance Load (primary mission config)						
Hellfire (no.)	16	16	/ 12	8	12	
30mm Rounds (no.)	1200	N/A	/ N/A	320	320	
Target Handover	N/A	No	/ 15%	13%	No	(Ch-2)
		degrada-	degada-	Degrada-	degrada-	



Maintainability (Mean Maint Hrs/Flt Hr)	(b)(1)	N/A	/ N/A	(b)(1)		
Reliability (Mean Time Bet Failure) (hrs)						
TADS	125	N/A	/ N/A	212.5	212.5	
PNVS	219	N/A	/ N/A	390	390	
Mission Reliability of AH-64D with Radar Kit (MTBF in Hours)	17	N/A	/ N/A	19.8	17	

LONGBOW APACHE, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
Airframe Modifications

	<u>DE</u>	<u>Approved Program;PdE Objective/Threshold</u>		<u>Demonstrated Perf</u>	<u>Current Estimate</u>	
System Reliability AH-64D with Radar Kit (MTBF in Hours)	3.9	N/A	/ N/A	4.0	3.2	
Ao, Operational Availability (%) of AH-64D w/FCR Kit	80	79	/ 75	91.4	79	(Ch-3)
Mean Time To Repair AH-64D w/o Radar Kit (hours)	1.5	N/A	/ N/A	1.65	1.5	
Max Mission Gross Weight (lbs)	16800	N/A	/ N/A	16608	16800	
Built-in-Test Effectiveness (fault detection % of Electronic Components)	95	N/A	/ N/A	55	95	
Ferry Range - AH-64D w/o Radar Kit (nautical miles)	755	N/A	/ N/A	800	755	

The objective for Ordnance Load (primary mission configuration) refers to AH-64A goal. The Longbow primary mission configuration is 8 Longbow Hellfire missiles, and 320 30mm rounds.

b. (U) Previous Change Explanations --

The number of Hellfire missiles was revised from 8 to 12 to match the key performance parameters validated by the Joint Requirements Oversight Council.

c. (U) Current Change Explanations --

(Ch-1) The Vertical Rate of Climb (VROC) current estimate is revised from 850 to 450. Based on demonstrated performance, the Project Manager estimates that the aircraft will meet or exceed the VROC objective.

(b)(1)

(Ch-3) The Operational Availability current estimate is revised from 80 to 79. The Project Manager expects that the aircraft will

10c. (U) Performance Characteristics (Cont'd):

Airframe Modifications
meet the objective.

d. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

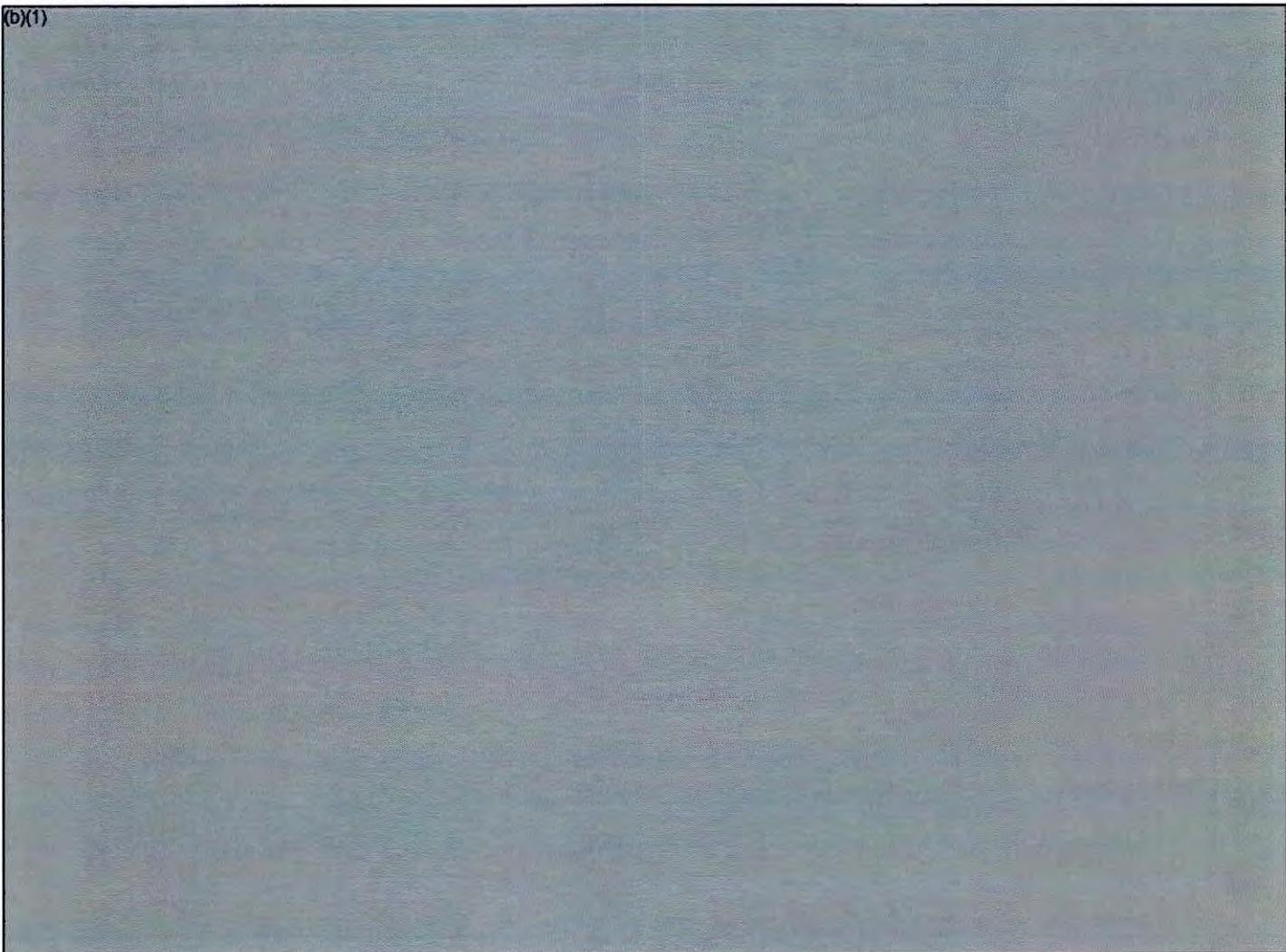
(U) Approved Program;PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

Fire Control Radar

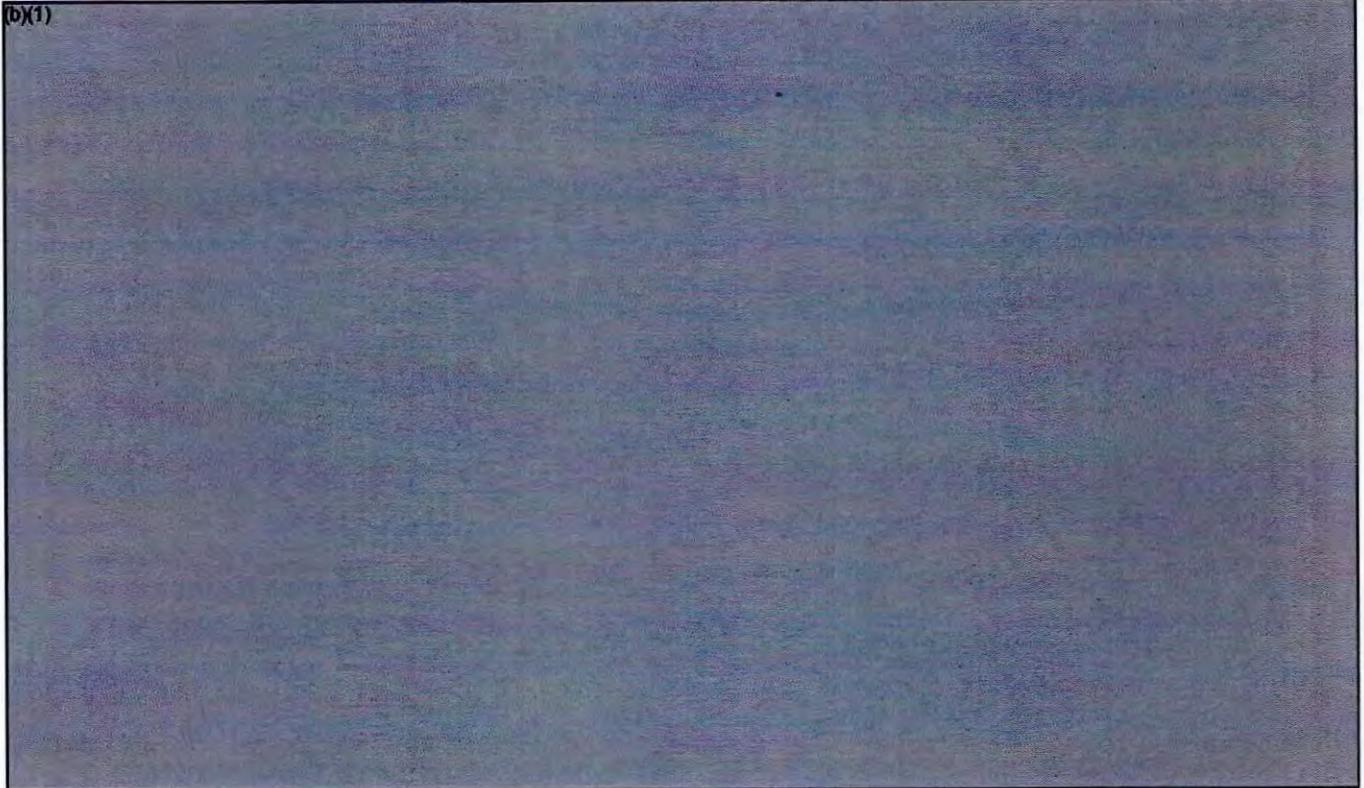
a. (U) Performance --	Approved Program;PdE <u>DE</u>	Demon- strated <u>Perf</u>	Current <u>Estimate</u>
-----------------------	--------------------------------------	----------------------------------	----------------------------

(b)(1)

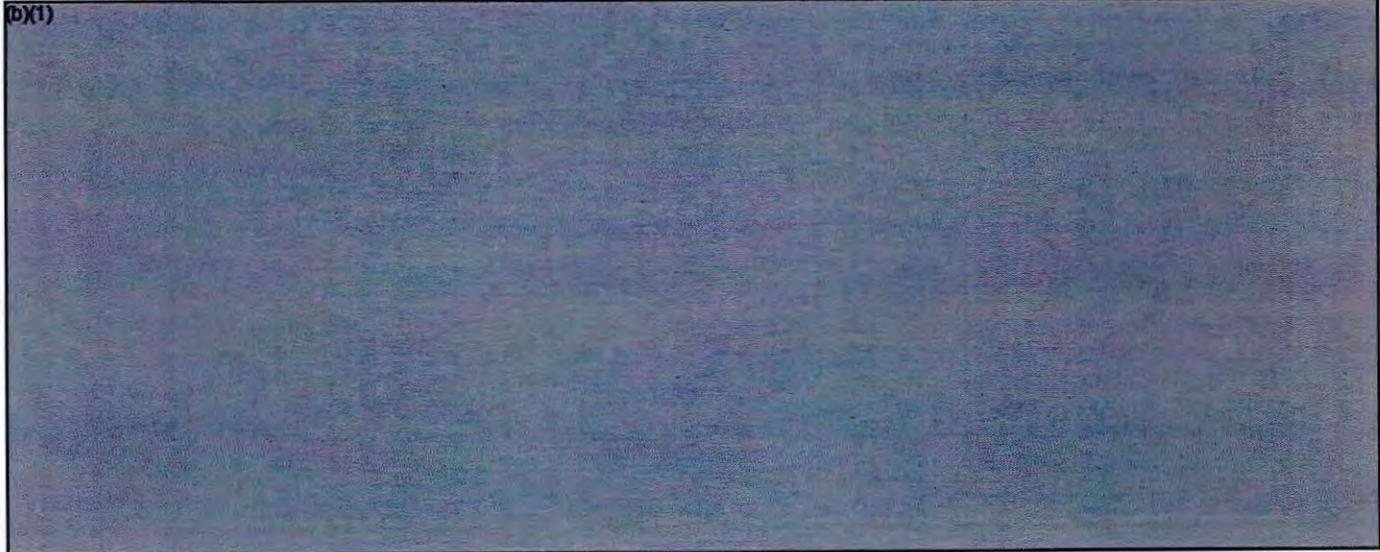


LONGBOW APACHE, December 31, 1995

10a. (U) Performance Characteristics (Cont'd):
Fire Control Radar

	DE	Approved Program; PdE Objective/Threshold	Demon- strated Perf	Current Estimate
(b)(1)				

b. (U) Previous Change Explanations --

(b)(1)				
--------	--	--	--	--

b)(1)

c. (U) Current Change Explanations --

(Ch-1) The Probability of Detection for Moving targets @ 6Km was added to the Acquisition Program Baseline (dated November 27, 1996).

d. (U) References --

(U) Development Estimate:

DAE approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program; PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

11. (U) Total Program Cost and Quantity (Current Dollars in Millions):

Airframe Modifications

	<u>Development</u>	<u>Approved</u>	<u>Current</u>
a. (U) Cost --	<u>Estimate</u>	<u>Program; PdE</u>	<u>Estimate</u>
Development (RDT&E)	473.1	638.4	631.1
Procurement	4248.4	5052.2	5083.0
Flyaway	(3123.1)		(3909.0)
Other Weapon System	(827.9)		(1087.6)
Peculiar Support	(0.0)		(40.8)
Initial Spares	(297.4)		(45.6)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	4721.5	5690.6	5714.1
 Escalation	 842.9	 1337.2	 922.0
Development (RDT&E)	(-41.6)	(-46.1)	(-37.8)
Procurement	(884.5)	(1383.3)	(959.8)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	5564.4	7027.8	6636.1

The Development Estimate costs were divided by .87242, converting them from Base Year 1991 dollars into Base Year 1996 dollars. This factor was used for both appropriations.

LONGBOW APACHE, December 31, 1995

11b. (U) Total Program Cost and Quantity (Cont'd):
Airframe Modifications

	Development <u>Estimate</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
b. (U) Quantity --			
Development (RDT&E)	0	0	0
Procurement	<u>758</u>	<u>758</u>	<u>758</u>
Total	758	758	758

Note: Excludes 5 RDTE prototypes from the SAR Baseline and 6 from the Current Estimate that are not considered fully configured.

The number of LRIP units approved at the Milestone II decision was 28 Longbow Apache AH-64D aircraft. That quantity was established based on affordability considerations and the Design to Unit Production Cost (DTUPC) goal; at that time, the DTUPC was determined solely from estimates. The current procurement quantities are determined based on actual cost data and funding constraints. The formal LRIP requirement was eliminated from the Longbow program upon approval of the Acquisition Program Baseline effective March 18, 1994.

c. (U) Foreign Military Sales/International Cooperative Programs -- Foreign military sales commitments to date include 30 for the Netherlands for \$669.4M.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:
DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program:PdE:
DAE Approved Acquisition Program Baseline dated November 27, 1995.

Fire Control Radar

	Development <u>Estimate</u>	Approved <u>Program:PdE</u>	Current <u>Estimate</u>
a. (U) Cost --			
Development (RDT&E)	884.1	885.2	863.6
Procurement	570.4	813.9	788.9
Flyaway	(465.8)		(770.8)
Other Weapon System	(74.5)		(0.1)
Peculiar Support	(0.0)		(0.0)
Initial Spares	(30.1)		(18.0)
Construction (MILCON)	0.0	0.0	0.0
Ops. and Maint. (O&M)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Total FY 96 Base-Year \$	1454.5	1699.1	1652.5

Longbow Apache, December 31, 1995

11a. (U) Total Program Cost and Quantity (Cont'd):
Fire Control Radar

	<u>Development Estimate</u>	<u>Approved Program: PdE</u>	<u>Current Estimate</u>
Escalation	-12.0	2.3	-13.4
Development (RDT&E)	(-113.3)	(-117.5)	(-101.7)
Procurement	(101.3)	(119.8)	(88.3)
Construction (MILCON)	(0.0)	(0.0)	(0.0)
Ops. and Maint. (O&M)	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Total Then-Year \$	1442.5	1701.4	1639.1

The Development Estimate costs were divided by .87242, converting them from Base Year 1991 dollars into Base Year 1996 dollars. This factor was used for both appropriations.

b. (U) Quantity --

Development (RDT&E)	0	0	0
Procurement	<u>227</u>	<u>227</u>	<u>227</u>
Total	227	227	227

Note: Excludes 10 RDTE prototypes from the SAR Baseline and 10 from the Current Estimate that are not considered fully configured.

The number of LRIP units approved at the Milestone II decision was 28 Longbow Fire Control Radars. That quantity was established based on affordability considerations and the Design to Unit Production Cost (DTUPC) goal; at that time, the DTUPC was determined solely from estimates. The current procurement quantities are determined based on actual cost data and funding constraints. The formal LRIP requirement was eliminated from the Longbow program upon approval of the Acquisition Program Baseline effective March 18, 1994.

c. (U) Foreign Military Sales/International Cooperative Programs -- None.

d. (U) Nuclear Costs -- None.

e. (U) References --

(U) Development Estimate:

DAE Approved Acquisition Program Baseline dated March 8, 1991.

(U) Approved Program: PdE:

DAE Approved Acquisition Program Baseline dated November 27, 1995.

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12. (U) Unit Cost Summary:

Airframe Modifications

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY96\$)	5714.1	6354.3	
(2) Quantity	758	758	
(3) Unit Cost	7.538	8.383	-10.08
b. (U) Procurement			
(1) Cost (BY96\$)	5083.0	5700.4	
(2) Quantity	758	758	
(3) Unit Cost	6.706	7.520	-10.83

Fire Control Radar

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
a. (U) Total Program			
(1) Cost (BY96\$)	1652.5	1550.8	
(2) Quantity	227	227	
(3) Unit Cost	7.280	6.832	6.56
b. (U) Procurement			
(1) Cost (BY96\$)	788.9	666.2	
(2) Quantity	227	227	
(3) Unit Cost	3.475	2.935	18.42

	<u>Current Estimate</u> (DEC 95 SAR)	<u>UCR Baseline</u> (MAR 95 APB)	<u>Percent Change</u>
c. (U) Total Program			
(1) Cost (TY\$)	1639.1	1528.8	
(2) Unit Cost	7.221	6.735	7.215

LONGBOW APACHE, December 31, 1995

12. (U) Unit Cost Summary (Cont'd):

Fire Control Radar

	<u>Current Estimate</u>	<u>UCR Baseline</u>	<u>Percent Change</u>
d. (U) Procurement			
(1) Cost (TY\$)	877.2	761.8	
(2) Unit Cost	3.864	3.356	15.148

e. (U) Changes from the Previous SAR (DEC 94 SAR) -

	<u>Changes in \$ or Qty</u>	<u>Percent Change</u>
(1) PAUC (BY96\$)	0.520	7.69
(2) PAUC (BY96\$)	0.587	20.32
(3) PAUC Quantity	227	N/A
(4) PAUC (TY\$)	0.570	8.57
(5) APUC (TY\$)	0.569	17.27

f. (U) Initial SAR (DEC 93)

(1) Program Acquisition Cost (BY\$) --	1561.5
(2) Program Acquisition Cost (TY\$) --	1497.0

g. (U) Unit Cost Changes.

(1) (U) PAUC --

The primary reasons for the Program Acquisition Unit Cost increase are (1) a revised estimate for System Program Management that incorporates actual data from the Engineering and Manufacturing Development (EMD) and Long Lead contracts, (2) addition of Depot Maintenance Plant Equipment that was formerly funded by DBOF, (3) a revised estimate for spares based on complete EMD data, and (4) additional nonrecurring and Engineering Change Order costs plus minor adjustments.

(2) (U) APUC --

The primary reasons for the Average Unit Procurement Cost increase are (1) a revised estimate for System Program Management that incorporates actual data from the Engineering and Manufacturing Development (EMD) and Long Lead contracts, (2) addition of Depot Maintenance Plant Equipment that was formerly funded by DBOF, (3) a revised estimate for spares based on complete EMD data, and (4) additional nonrecurring and Engineering Change Order costs plus

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12. (U) Unit Cost Summary (Cont'd):

Fire Control Radar
minor adjustments.

h. (U) Impact of Performance or Schedule Changes on Unit Cost.

None.

i. (U) Program Management and Control.

The Longbow Program Manager is COL Stephen G. Kee. The Deputy Project Manager is Mr. Gary Nenninger. The Acting Chief of the Business Management Division is Mr. William Redmond.

j. (U) Cost Control Actions.

A revised Acquisition Program Baseline incorporating the changed program cost estimates was approved in November 1995. The Project Manager is considering a multi-year procurement strategy to achieve greater cost efficiencies in the program.

k. (U) Contract Information (In Millions of Then-Year Dollars) --

- (U) (1) Contractor(s): JOINT VENTURE
- (2) Contract Title: LONGBOW FCR FSD
- (3) Contract Number: DAAJ09-91-C-0175
- (4) Actual Cost of Work Performed (ACWP) to date: 295.1
- (5) Percent contract completed (BCWP/target cost): 98.76
- (6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$-0.4/-0.70%	\$-3.4/-5.30%
Previous SAR	\$-2.6/-1.20%	\$-3.2/-1.47%
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. -

For the final months of the development effort, the contractor was not required to report cost and schedule variance information. The Project Manager expects the contract will reach its target price at completion.

(8) (U) Impact of Variances on Contract. -

None.

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12. (U) Unit Cost Summary (Cont'd):

Fire Control Radar

(9) (U) Impact of Variances on Unit Costs. -

None.

- (U) (1) Contractor(s): MCDONNELL DOUGLAS
- (2) Contract Title: AH-64 Longbow Phase II
- (3) Contract Number: DAAJ09-89-C-A086
- (4) Actual Cost of Work Performed (ACWP) to date: 420.0
- (5) Percent contract completed (BCWP/target cost): 93.90
- (6) Variances:

	Cost Variance (\$/%)	Schedule Variance (\$/%)
Baseline Report	\$-7.0/-5.30%	\$-5.5/-4.00%
Previous SAR	\$-31.0/-10.56%	\$-8.7/-3.06%
Current Values	\$-22.6/-8.54%	\$-4.6/-2.52%
Change from the Baseline Report	\$-15.6/-3.24%	\$+0.9/+1.48%
Change from the Previous SAR	\$+8.4/+2.02%	\$+4.1/+0.54%

(7) (U) Explanation of Variances. -

The performance and variances in this contract do not have any impact on the unit cost breach for the Fire Control Radar mission kit end item.

(8) (U) Impact of Variances on Contract. -

The variances in this contract have been used in developing the Project Manager's estimate at completion for this contract.

(9) (U) Impact of Variances on Unit Costs. -

This contract does not have any impact on the unit cost breach for the Fire Control Radar mission kit end item.

- (U) (1) Contractor(s): Longbow Ltd Liability Co.
- (2) Contract Title: Fire Control Radar Lot 1
- (3) Contract Number: DAAJ09-95-C-A002
- (4) Actual Cost of Work Performed (ACWP) to date: N/A
- (5) Percent contract completed (BCWP/target cost): N/A

Longbow Apache, December 31, 1995

12. (U) Unit Cost Summary (Cont'd):

Fire Control Radar

(6) Variances:

	Cost Variance	Schedule Variance
	(\$/%)	(\$/%)
Baseline Report	N/A	N/A
Previous SAR	N/A	N/A
Current Values	N/A	N/A
Change from the Baseline Report	N/A	N/A
Change from the Previous SAR	N/A	N/A

(7) (U) Explanation of Variances. - None.

(8) (U) Impact of Variances on Contract. - None.

(9) (U) Impact of Variances on Unit Costs. - None.

1. (U) Contracts Exceeding Contract Cost Baseline Thresholds. -- None.

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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
Development Estimate	431.5	5132.9	0.0	5564.4
Previous Changes:				
Economic	-77.8	-649.1	-	-726.9
Quantity	-	-	-	-
Schedule	-	+424.8	-	+424.8
Engineering	-	-	-	-
Estimating	+237.4	+2006.1	-	+2243.5
Other	-	-	-	-
Support	-	+694.3	-	+694.3
Subtotal	+159.6	+2476.1	-	+2635.7
Current Changes:				
Economic	7.8	-205.6	-	-197.8
Quantity	-	-	-	-
Schedule	-	-734.9	-	-734.9
Engineering	-	-	-	-
Estimating	-5.6	-144.2	-	-149.8
Other	-	-	-	-
Support	-	-481.5	-	-481.5
Subtotal	+2.2	-1566.2	-	-1564.0
Total Changes	+161.8	+909.9	-	+1071.7
Current Estimate	593.3	6042.8	-	6636.1

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Longbow Apache, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

a. (U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	473.1	4248.4	0.0	4721.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+148.2	-	+148.2
Engineering	-	-	-	-
Estimating	+164.5	+978.1	-	+1142.6
Other	-	-	-	-
Support	-	+315.8	-	+315.8
Subtotal	+164.5	+1442.1	-	+1606.6
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-163.0	-	-163.0
Engineering	-	-	-	-
Estimating	-6.5	-177.4	-	-183.9
Other	-	-	-	-
Support	-	-267.1	-	-267.1
Subtotal	-6.5	-607.5	-	-614.0
Total Changes	+158.0	+834.6	-	+992.6
Current Estimate	631.1	5083.0	-	5714.1

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices
 Estimating: Realign all prior changes to Airframe Modifications end item. Increased scope for training/simulator development, matrix support, production engineering, test demonstration, reliability data growth testing, and functional configuration audit. A decrement to FY 95 funding caused unfavorable impact on Longbow Crew Trainer development, Functional Configuration Audit, and supplier qualification. The Tactical Engagement Simulation System was added to the program, as

LONGBOW APACHE, December 31, 1995

13b. (U) Cost Variance Analysis (Cont'd):

Airframe Modifications

were OPTEC funds to support Initial Operational Test & Evaluation. Funds were reprogrammed to the Aviation Electronic Combat Project Manager's Office and to support Small Business Innovative Research.

Procurement

Economic: Revised escalation indices and economic adjustment for negative program change.

Schedule: The annual procurement buy profile was revised; four years were added to the program as a result of a rate reduction from 6 to 4 aircraft per month.

Estimating: Realign prior changes to Airframe Modifications end item. Revised estimate for launchers, GFE, tooling, ECOs, and hardware; change in learning curve methodology for premodification; adjustment to reconcile flyaway and support (system program management). The first unit cost increased to reflect actual prototype costs from Engineering and Manufacturing Development. An FY 95 funding decrement had negative impact on Long Lead time items, GFE avionics, and the production schedule. The estimate for launchers increased.

Support: Realign prior changes to Airframe Modifications end item. Change in method of estimating initial spares; increase in required peculiar ground support equipment; reduced data requirements after FY 2000; increased new equip training costs; addition of first destination transportation, post deployment software support, and contractor logistics support. The estimates for initial spares and peculiar support equipment were revised. Four years of support costs were added for data, contract logistics support, and matrix support due to schedule changes. The FY 95 funding decrement reduced the engine buy from 46 to 31.

c. (U) Current Change Explanations --

(Dollars in Millions)
Base-Year Then-Year

(1) RDT&E

Revised escalation indices. (Economic)	N/A	+7.8
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13c. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Adjustment for Current & Prior Inflation. (Estimating)	-8.6	-7.8
Revised estimate for Tactical Engagement Simulation System (TESS) (Estimating)	+2.1	+2.2
RDT&E Subtotal	<u>-6.5</u>	<u>+2.2</u>
 (2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-560.4
Economic Adjustment for Negative Program Change. (Economic)	N/A	+354.8
Adjustment for Current & Prior Inflation. (Estimating)	+2.8	+2.9
Change in annual procurement buy profile including shortened program by 4 years (Schedule)	-163.0	-465.5
Economic adjustment for negative program change (Schedule)	N/A	-269.4
Revised estimate to flyaway costs due to multi-year contracting and increased production rates (Estimating)	-115.7	-57.6
Revised Estimate for Halon funding (PBD 604) (Estimating)	-0.6	-0.6
Second Embedded Global Positioning System/Inertial Navigation System (EGI) added to program (Estimating)	+18.1	+19.7
Revised estimate to add Depot Maintenance Plant Equipment (Estimating)	+41.0	+49.8
Reduction to nonrecurring costs based on Lot 1 (Estimating)	-7.2	-9.8
Revised estimate to launcher program as a result of cost reduction program (Estimating)	-115.8	-148.6
Adjustment for Current & Prior Inflation. (Support)	+1.1	+1.1
Economic adjustment for negative program change (Support)	N/A	-101.0
Revised estimate for reduced Initial Spares (Support)	-75.7	-98.7
Peculiar Support Equipment increased estimate based on END actuals (Support)	+11.8	+15.3

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13c. (U) Cost Variance Analysis (Cont'd):
Airframe Modifications

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Government System Program Management / Matrix Support decrease due to four-year program compression (Support)	-109.2	-156.4
Revised estimate for reduced training devices requirement (Support)	-5.3	-22.5
Revised estimate for Other Weapons Systems decrease due to four-year program compression, multi-year contracting, and reduced TESS funding (PED 604) (Support)	-110.4	-146.6
Fire Control Radar (FCR) data and New Equipment Training moved from FCR end item to airframe contract (Support)	+20.6	+27.3
Procurement Subtotal	<u>-607.5</u>	<u>-1566.2</u>

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LONGBOW APACHE, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Fire Control Radar

a. (U) Summary (Current (Then-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	770.0	671.7	0.0	1442.5
Previous Changes:				
Economic	-103.1	-124.0	-	-227.1
Quantity	-	-	-	-
Schedule	-	+10.4	-	+10.4
Engineering	-	-	-	-
Estimating	+94.1	+253.8	-	+347.9
Other	-	-	-	-
Support	-	-64.0	-	-64.0
Subtotal	-9.0	+76.2	-	+67.2
Current Changes:				
Economic	13.5	-19.3	-	-5.8
Quantity	-	-	-	-
Schedule	-	7.2	-	+7.2
Engineering	-	-	-	-
Estimating	-13.4	172.0	-	+158.6
Other	-	-	-	-
Support	-	-30.6	-	-30.6
Subtotal	+0.1	+129.3	-	+129.4
Total Changes	-8.9	+205.5	-	+196.6
Current Estimate	761.9	877.2	-	1639.1

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LONGBOW APACHE, December 31, 1995

13a. (U) Cost Variance Analysis (Cont'd):
Fire Control Radar

a. (U) Summary (FY 1996 Constant (Base-Year) Dollars in Millions)

	RDT&E	PROC	MILCON	TOTAL
Development Estimate	884.1	570.4	0.0	1454.5
Previous Changes:				
Quantity	-	-	-	-
Schedule	-	+3.2	-	+3.2
Engineering	-	-	-	-
Estimating	-5.0	+145.5	-	+140.5
Other	-	-	-	-
Support	-	-63.6	-	-63.6
Subtotal	-5.0	+85.1	-	+80.1
Current Changes:				
Quantity	-	-	-	-
Schedule	-	-	-	-
Engineering	-	-	-	-
Estimating	-15.5	156.3	-	+140.8
Other	-	-	-	-
Support	-	-22.9	-	-22.9
Subtotal	-15.5	+133.4	-	+117.9
Total Changes	-20.5	+218.5	-	+198.0
Current Estimate	863.6	788.9	-	1652.5

b. (U) Previous Change Explanations --

RDT&E

Economic: Revised escalation indices
 Estimating: Adjustment for current and prior inflation, and refining the estimate. The FY 95 funding decrement caused delays in completing component qualification and DAB-directed Test, Analyze, and Fix effort. Funds were reprogrammed to the Aviation Electronic Combat Project Manager's Office and to support Small Business Innovative Research.

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13b. (U) Cost Variance Analysis (Cont'd):
Fire Control Radar

Procurement

- Economic: Revised escalation indices and adjustment for negative program change.
- Schedule: Change in annual procurement buy schedule.
- Estimating: Increases in Contractor System Program Management requirements, Design to Unit Production First Unit Cost, nonrecurring requirements including tooling, and recurring hardware. The FY 95 funding decrement caused delays to tooling and test equipment, composite manufacturing initiatives, and essential engineering change requirements. The first unit cost increased to reflect the actual prototype costs from Engineering and Manufacturing Development.
- Support: Realign support costs: all training devices and support costs associated with quantity change moved to Airframe Modifications end item. Increase in Initial Spares requirements due to increase in recurring hardware costs. Increase in data requirements. Revised estimating methodology for initial spares. The estimate for other weapons system costs was revised.

c. (U) Current Change Explanations --

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
(1) <u>RDT&E</u>		
Revised escalation indices. (Economic)	N/A	+13.5
Adjustment for Current & Prior Inflation. (Estimating)	-15.5	-13.4
RDT&E Subtotal	<u>-15.5</u>	<u>+0.1</u>
(2) <u>Procurement</u>		
Revised escalation indices. (Economic)	N/A	-24.6
Economic Adjustment for Negative Program Change. (Economic)	N/A	+5.3
Adjustment for Current & Prior Inflation. (Estimating)	+1.3	+1.3
Increased System Program Management estimate as a result of Engineering and Manufacturing Development and Lot 1 settlement (Estimating)	+74.7	+80.8

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13c. (U) Cost Variance Analysis (Cont'd):

Fire Control Radar

	(Dollars in Millions)	
	<u>Base-Year</u>	<u>Then-Year</u>
Revised estimate to add Depot Maintenance Plant Equipment (Estimating)	+32.4	+39.3
Increased Radar Frequency Interferometer costs based on Lot 1 contracting (Estimating)	+32.3	+33.9
Revised Design to Unit Production Cost estimate due to Lot 1 settlement (Estimating)	+15.6	+16.7
Change in annual procurement buy profile (Schedule)	--	+7.2
Revised estimate for reduced Initial Spares requirement (Support)	-1.0	-1.7
Revised estimate for reduced Peculiar Ground Support Equipment requirements. (Support)	-1.3	-1.6
Other Weapon System costs reduced; Data and New Equipment Training moved to aircraft multiyear contract (Support)	-20.6	-27.3
 Procurement Subtotal	 <u>+133.4</u>	 <u>+129.3</u>

14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars
in Millions):

Airframe Modifications

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
7.341	-1.220	--	-0.409	--	2.762	--	0.281	1.414	8.755

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14. (U) Program Acquisition Unit Cost (PAUC) History (Then-Year Dollars in Millions) (Cont'd)

Fire Control Radar

(U) Current SAR Baseline to Current Estimate --

PAUC (Initial Est)	Changes								PAUC (Current Est)
	Econ	Qty	Sch	Eng	Est	Other	Spt	Total	
6.355	-1.026	--	0.078	--	2.231	--	-0.417	0.866	7.221

15. (U) Contract Information (Then-Year Dollars in Millions):

a. (U) RDT&E --
 (U) Longbow FCR FSD:
 JOINT VENTURE, ORLANDO, FL
 DAAJ09-91-C-0175, CPIF/AF
 Award: December 21, 1990
 Definitized: December 21, 1990

Current Contract Price			Estimated Price At Completion	
Target	Ceiling	Qty	Contractor	Program Manager
\$328.1	N/A	0	\$328.1	\$328.1

	Cost Variance	Schedule Variance
Previous Cumulative Variances	\$-2.2	\$-2.0
Cumulative Variances To Date	N/A	N/A
Net Change	\$2.2	\$2.0

Explanation of Change:

The contract is over 98% complete and will not be reported in future SARs. For the final months of the development effort, the contractor was not required to submit cost and schedule variance information.

(U) AH-64 Longbow Phase II:
 MCDONNELL DOUGLAS, MESA, AZ
 DAAJ09-89-C-A086, CPIF
 Award: August 30, 1989
 Definitized: August 30, 1989

Initial Contract Price		
Target	Ceiling	Qty
\$194.7	N/A	0

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15. (U) Contract Information (Cont'd):

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$394.6	N/A	0	\$470.6	\$471.1
Previous Cumulative Variances			<u>Cost Variance</u>	<u>Schedule Variance</u>
Cumulative Variances To Date (01/28/96)			\$-29.4	\$-8.9
Net Change			<u>\$-22.7</u>	<u>\$-4.6</u>
			\$6.7	\$4.3

Explanation of Change:

Contract trends have stabilized; both cost and schedule variances have improved over the past year. This contract is approximately 94% complete and will not be reported in future SARs.

b. (U) Procurement --

(U) <u>FIRE CONTROL RADAR LOT 1:</u>	Initial Contract Price		
	<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>
Longbow LTD Liability Co., Orlando, FL			
DAAJ09-95-C-A002, FFP	\$139.0	N/A	10
Award: March 1, 1996			
Definitized: N/A			

Current Contract Price			Estimated Price At Completion	
<u>Target</u>	<u>Ceiling</u>	<u>Qty</u>	<u>Contractor</u>	<u>Program Manager</u>
\$139.0	N/A	10	\$139.0	\$139.0

Explanation of Change:

Cost and Schedule variance reporting is not required on this FFP contract.

This is the first time that this contract has appeared in a SAR. The contract was awarded on March 1, 1996 as an Undefined Contract Action and should be definitized by the end of the month.

16. (U) Program Funding Summary (Current Estimate in Millions of Dollars):

a. (U) Program Status --

Total Program

- (1) Percent Program Completed: 50.0% (12 yrs/24 yrs)
- (2) Percent Program Cost Appropriated: 22.8% (\$1884.0 / \$8275.2)

LONGBOW APACHE, December 31, 1995

Airframe Modifications

- (1) Percent Program Completed: 42.9% (9 yrs/21 yrs)
- (2) Percent Program Cost Appropriated: 14.9% (\$987.2 / \$6636.1)

Fire Control Radar

- (1) Percent Program Completed: 63.2% (12 yrs/19 yrs)
- (2) Percent Program Cost Appropriated: 54.7% (\$896.8 / \$1639.1)

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Total Program

<u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2008)	<u>Total</u>
RDT&E	1326.3	23.0	5.9	-	1355.2
Procurement	117.0	417.7	391.9	5993.4	6920.0
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	1443.3	440.7	397.8	5993.4	8275.2

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Airframe Modifications

<u>Appropriation</u>	<u>Prior Years</u> (FY88-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2008)	<u>Total</u>
RDT&E	564.4	23.0	5.9	-	593.3
Procurement	75.7	324.1	293.3	5349.7	6042.8
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	640.1	347.1	299.2	5349.7	6636.1

LONGBOW APACHE, December 31, 1995

16b. (U) Program Funding Summary (Cont'd):

Fire Control Radar

b. (U) Appropriation Summary (Then-Year Dollars in Millions)

Fire Control Radar

<u>Appropriation</u>	<u>Prior Years</u> (FY85-95)	<u>Budget Year</u> (FY96)	<u>Budget Year</u> (FY97)	<u>Balance To Complete</u> (FY98-2003)	<u>Total</u>
RDT&E	761.9	-	-	-	761.9
Procurement	41.3	93.6	98.6	643.7	877.2
MILCON	-	-	-	-	-
O&M	-	-	-	-	-
Total	803.2	93.6	98.6	643.7	1639.1

c. (U) Annual Summary -- Airframe Modifications

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Ex-pended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1988				22.9	18.7	18.6	18.6	3.0
1989				55.3	47.0	46.3	46.3	4.2
1990				78.1	68.9	68.4	68.3	4.1
1991				62.0	56.8	56.7	56.7	4.3
1992				78.1	73.2	73.2	73.1	3.0
1993				105.2	100.9	100.6	100.4	2.4
1994				88.9	86.9	86.9	85.5	2.0
1995				112.3	112.0	111.7	71.6	1.9

Longbow Apache, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Airframe Modifications

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1996				22.6	23.0			2.0
1997				5.7	5.9			2.2
Subtot				631.1	593.3	562.4	520.5	

Appropriation: 2031 Aircraft Procurement, Army

1995		16.6		74.5	75.7	75.7	27.4	1.9
1996	24	17.8	263.1	311.9	324.1	66.6	1.3	2.0
1997	29	10.6	195.5	275.7	293.3			2.2
1998	40	6.7	242.0	299.1	325.2			2.2
1999	67	0.9	344.1	383.1	425.8			2.3
2000	72	0.2	349.9	460.3	522.9			2.2
2001	72		333.5	479.1	556.2			2.2
2002	72		331.4	464.6	551.2			2.2
2003	72	41.0	326.3	472.5	573.0			2.2
2004	72		356.4	497.4	616.4			2.2
2005	72		312.5	387.8	491.1			2.2
2006	72		308.9	390.7	505.7			2.2
2007	72		305.7	363.7	481.2			2.2

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LONGBOW APACHE, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Airframe Modifications

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

2008	22		145.9	222.6	301.0			2.2
Subtot	758	93.8	3815.2	5083.0	6042.8	142.3	28.7	
Grand Total	758	93.8	3815.2	5714.1	6636.1	704.7	549.2	

c. (U) Annual Summary -- Fire Control Radar

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army

1985				19.9	14.7	14.7	14.7	3.4
1986				39.7	30.2	30.2	30.2	2.8
1987				98.8	77.6	77.6	77.6	2.7
1988				101.6	83.0	83.0	83.0	3.0
1989				100.7	85.6	85.2	85.2	4.2
1990				106.0	93.5	93.1	92.9	4.1
1991				86.3	79.0	79.0	78.6	4.3
1992				82.2	77.0	77.0	76.8	3.0

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LONGBOW APACHE, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Fire Control Radar

Fiscal Year	Qty	Flyaway FY96 Dollars		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		Nonrec	Rec		Program	Obligated	Expended	

Appropriation: 2040 Research, Development, Test + Eval, Army (Cont'd)

1993				124.0	118.9	118.9	118.5	2.4
1994				82.2	80.3	80.3	79.7	2.0
1995				22.2	22.1	20.1	14.1	1.9
Subtot				863.6	761.9	759.1	751.3	

Expenditures and obligations are as of 01/16/95.

Appropriation: 2031 Aircraft Procurement, Army

1995		13.9		40.6	41.3	41.3	13.5	1.9
1996	10	6.8	101.3	90.1	93.6	2.1		2.0
1997	10	10.6	78.7	92.7	98.6			2.2
1998	34	6.5	97.3	107.0	116.3			2.2
1999	44		113.4	114.3	127.0			2.3
2000	48		116.9	117.3	133.2			2.2
2001	49		112.0	114.0	132.4			2.2
2002	32		81.0	80.5	95.5			2.2
2003		32.4		32.4	39.3			2.2
Subtot	227	70.2	700.6	788.9	877.2	43.4	13.5	
Grand								

Longbow Apache, December 31, 1995

16c. (U) Program Funding Summary (Cont'd):
Fire Control Radar

Fiscal Year	Qty	Flyaway		Total Base Year\$	Total Then-Year \$			Escl Rate (%)
		FY96 Dollars			Program	Obligated	Expended	
		Nonrec	Rec					

Appropriation: 2031 Aircraft Procurement, Army (Cont'd)

Total	227	70.2	700.6	1652.5	1639.1	802.5	764.8
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17. (U) Production Rate Data:

Airframe Modifications

a. (U) Deliveries to Date -- 0/0.

b. (U) Approved Design-to-Cost Objective --

(Average Unit Flyaway Cost)

	Development Estimate	Current Estimate	Latest Approved Threshold
@ Qty 758 - @ Peak Rate: 6.0/mo			
FY 96 Base-Year \$	2.904	3.356	0.000
Then Year \$	3.381	4.012	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 96 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

The Longbow Program has a Design to Unit Production Cost (DTUPC) goal for Airframe Modifications, but does not have an approved threshold. The DTUPC goal includes prime contractor recurring manufacturing (materiel and labor). It excludes Government Furnished Equipment, Initial Production Facilities, System Test and Evaluation, and System Program Management costs included as flyaway costs. The DTUPC goal is established only for the total production quantity of 758 and does not apply at any reduced portion or early lot quantities.

Fire Control Radar

a. (U) Deliveries to Date -- 0/0.

LONGBOW APACHE, December 31, 1995

17b. (U) Production Rate Data (Cont'd):
Fire Control Radar

b. (U) Approved Design-to-Cost Objective --

	(Average Unit Flyaway Cost)		
	Development <u>Estimate</u>	Current <u>Estimate</u>	Latest Approved <u>Threshold</u>
@ Qty 227 - @ Peak Rate: 4.0/mo			
FY 96 Base-Year \$	1.652	1.596	0.000
Then Year \$	1.780	1.779	0.000
@ Qty 0 (1st three years) - @ Peak Rate: 0.0/mo			
FY 96 Base-Year \$	0.000	0.000	0.000
Then Year \$	0.000	0.000	0.000

The Longbow Program has a Design to Unit Production Cost (DTUPC) goal for the Fire Control Radar, but does not have an approved threshold. The DTUPC goal includes prime contractor recurring manufacturing (materiel and labor). It excludes Government Furnished Equipment, Initial Production Facilities, System Test and Evaluation, and System Program Management costs included as flyaway costs. The DTUPC Goal is established only for the total production quantity of 227 and does not apply at any reduced portion or early lot quantities.

18. (U) Operating and Support Costs:
Airframe Modifications

a. (U) Assumptions and Ground Rules --

Assumes 592 fielded aircraft each flying 14.5 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. The airframe Mean Time Between Failure (MTBF) goal is 19.5 hours at Maturity (\$0,000 flight hours). Source: Army Cost Position (Oct 1995). The Longbow aircraft system has no antecedent.

LONGBOW APACHE, December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):
Airframe Modifications

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Longbow aircraft	Avg Annual Cost Per antecedent system
Replenishment	503.4	N/A
Depot Maintenance	0.7	N/A
Military Personnel	844.0	N/A
Other	227.6	N/A
Total	1575.7	N/A

c. (U) Contractor Support Costs -- None.

Fire Control Radar

a. (U) Assumptions and Ground Rules --

Assumes 187 fielded Fire Control Radars each flying 14.5 hours per month. Maintenance concept is 2 level maintenance, contractor depot support. At maturity (50,000 flight hours), the Fire Control Radar Mean Time Between Failure (MTBF) goal is 150 hours. Source: Army Cost Position (Oct 1995). The Longbow Fire Control Radar system has no antecedent.

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LONGBOW APACHE, December 31, 1995

18b. (U) Operating and Support Costs (Cont'd):
Fire Control Radar

b. (U) Costs -- (FY 1996 Constant (Base-Year) Dollars in Thousands)

Cost Element	Avg Annual Cost Per Fire Control Radar	Avg Annual Cost Per antecedent system
Replenishment	48.3	N/A
Depot Maintenance	0.0	N/A
Other	22.6	N/A
Total	70.9	N/A

c. (U) Contractor Support Costs -- None.

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