

UNCLASSIFIED
EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0601 Common Ground Equipment	2,790	6,141	4,110	3,969	3,587	3,690	3,799	3,902	CONT	CONT
W0852 Consolidated Automated Support System (CASS)	8,045	8,475	8,570	8,819	8,981	9,167	29,084	34,210	CONT	CONT
W1041 Aircraft Equipment Reliability/Maintainability Improvement Program (AERMIP)	1,377	1,315	899	769	672	677	700	719	CONT	CONT.
W1355 Aircraft Engine CIP	35,388	46,167*	39,714	47,526	41,628	37,373	73,135	84,162	CONT.	CONT.
TOTAL	47,600	62,098	53,293	61,083	54,868	50,907	106,718	122,993	Cont	Cont

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Common Ground Equipment is a Naval Aviation Project to apply new technology to common support equipment necessary to support all aircraft. CASS develops standardized Automated test Equipment (ATE) with computer assisted, multi-function capabilities to support the maintenance of aircraft subsystems and missiles. AERMIP is the only Navy program that provides engineering support for in-service out-of-production aircraft equipment and provides increased readiness at reduced operational and support cost. Aircraft Engine CIP develops reliability and maintainability (R&M) and safety enhancements for in-service Navy aircraft engines, transmission, propellers, starters, auxiliary power units, electrical generating systems, fuel systems, and fuels and lubricants.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under OPERATIONAL SYSTEMS DEVELOPMENT because it encompasses engineering and manufacturing for upgrade of existing operational systems.

*FY-99 budget includes a Congressional add of \$2,000K for Eddy Current Sensors executed under project W2663.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0601

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: Common Ground Equipment

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0601 COMMON GROUND EQUIPMENT										
TOTAL	2,790	6,141	4,110	3,969	3,587	3,690	3,799	3,902	CONT	CONT

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project introduces effective, efficient fleet support equipment through the application of new technology, thereby improving fleet supportability and aircraft readiness.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$ 290) Continued Advanced Boresight Equipment development program.
- (U) (\$ 750) Completed USN involvement with USAF Joint Service Electronic Combat Tester (JSECT).
- (U) (\$1054) Continued USN involvement with USAF Next Generation Munitions Handler.
- (U) (\$ 150) Initiated development of Universal Aircraft Axle Jack.
- (U) (\$ 95) Initiated development of an Automated Engine Turning Tool.
- (U) (\$ 145) Initiated and complete development of Universal Chock Adapters.
- (U) (\$ 83) Initiated development of Advanced Armament Trailer A/M 32U-13.
- (U) (\$223) Initiated and completed development of Common Missile Gel Pad.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0601

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: Common Ground Equipment

2. FY 1999 PLAN:

- (U) (\$3886) Continue Advanced Boresight Equipment development/LRIP program.
- (U) (\$ 570) Complete JSECT.
- (U) (\$ 957) Continue development of USAF Next General Munitions Handler (NGMH).
- (U) (\$ 155) Complete developing Automated Engine Turning Tool.
- (U) (\$ 490) Initiate and complete development of the Joint Engine Test Initiative (JETI).
- (U) (\$ 83) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) (\$ 680) Complete Advanced Boresight Equipment LRIP program.
- (U) (\$ 672) Continue development of USAF NGMH.
- (U) (\$ 90) Continue development of Universal Aircraft Axle Jack.
- (U) (\$ 320) Initiate development of Aircraft Engine Monitoring System.
- (U) (\$ 44) Complete development of Advanced Armament trailer A/M 32-13
- (U) (\$ 100) Initiate Joint project with US Army for Non Destructive Inspection (NDI) ultrasonic equipment.
- (U) (\$ 80) Initiate development of CVN/CVX stores and pod stowage.
- (U) (\$ 240) Initiate development of state-of-the-art fuel system for Standard Engine Test Set (SETS).

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PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W0601

PROJECT TITLE: Common Ground Equipment

- (U) (\$ 265) Initiate development of Aircraft Engine Test Facility Primary Air Inlet.
- (U) (\$ 220) Initiate development of Rapid Re-configurable Electronic Test Set.
- (U) (\$ 111) Initiate development of Night Vision goggle/SE compatibility.
- (U) (\$ 590) Initiate development of Turbo prop R&D Instrument Modernization.
- (U) (\$ 140) Initiate development of Shaft Load System for small turbine engines.
- (U) (\$ 235) Initiate development of Non-propelled Shipboard Weapons Loader.
- (U) (\$ 168) Initiate development of Turbo Engine Test Enclosure.
- (U) (\$ 55) Initiate and complete development of Expeditionary Airfield Weapons Ready Service Shelter.
- (U) (\$ 100) Initiate and complete development of Graphic User Interface (GUI) interface for Test Program Set (TPS) developers.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	2,836	6,341	4,187
(U) Appropriated Value:	2,836	6,341	
(U) Adjustments from President's Budget:	(46)	(200)	(77)
(U) FY 2000 President's Budget Submit:	2,790	6,141	4,110

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0601

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: Common Ground Equipment

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1998 decrease of \$46 thousand consists of decreases of \$14 thousand for the Small Business Innovation Research assessment, and \$32 thousand for minor program adjustments. The FY 1999 decrease of \$200 thousand reflects Congressional undistributed reductions. The FY 2000 reduction of \$77 thousand is due to minor pricing adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
(U) APN-7 (47C2)	115,012	144,802	154,354	123,126	129,370	115,172	118,536	118,548	Cont
(U) O&MN	4,130	4,564	4,850	4,992	5,118	5,246	5,104	5,234	Cont

Related RDT&E:

(U) P.E.: Not Applicable

(U) D. ACQUISITION STRATEGY: This is a non-ACAT program. Field activities propose tentative RDT&E projects. Internal panel merits and selects projects. Field activities develop projects and submit results. Operational Advisory Group (OAG) process selects projects to transition to procurement (APN-7).

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0601

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: Common Ground Equipment

(U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones				
Universal Chock		1/99 (MSIII)		
Advanced Boresight Program				12/01(MSIII)
NGMH				12/01(MSIII)
Automated Engine Turning Tool			1/00 (MSIII)	
Missile Support Pads (Gel)	10/98 (MSIII)			
Armament Maintenance Trailer			1/00(MSIII)	
Axle Jack				10/01(MSIII)
(U) Engineering Milestones				
Universal Chock	3/98 (CDR)			
Advanced Boresight Program		8/99 (CDR)		
NGMH	9/98 (CDR)			
Automated Engine Turning Tool	7/98 (CDR)			
Missile Support Pads (Gel)	7/98 (CDR)			
Armament Maintenance Trailer	7/98 (CDR)			
Axle Jack			7/00 (CDR)	
(U) T&E Milestones				
Universal Chock	7/98 (OT)			
Advanced Boresight Program				1/01(OT)
NGMH				1/01(OT)
Automated Engine Turning Tool		2/99 (OT)		
Missile Support Pads (Gel)	7/98 (OT)			
Armament Maintenance Trailer	10/98 (OT)			
Axle Jack				2/01(OT)
(U) Contract Milestones				
Advanced Boresight Program		1/99 (Contract Award)		
Automated Engine Turning Tool	7/98 (Contract Award)			
Missile Support Pads (Gel)	7/98 (Contract Award)			
Armament Maintenance Trailer	7/98 (Contract Award)			

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: Feb 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0651

PROJECT TITLE: Consolidated Automated Support System

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost Complete</u>	<u>Total Cost</u>
Hardware Development	C/FP	AAI Corp Cockeysville MD	2,760	4,000	1/99	200	1/00	N/A	N/A
Miscellaneous	Various	Various	10,442	2,058	11/98	3,910	11/99	CONT	CONT
Subtotal Hardware Development			13,202	6,058		4,110		CONT	CONT
Remarks:									
Subtotal Support			0	0		0			
Remarks:									
Subtotal Test & Evaluation			0	0		0			
Remarks:									
Subtotal Management			0	0		0			
SBIR Assessment				83					
Remarks:									
Total Cost			13,202	6,141		4,110		CONT	CONT

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0852

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: Consolidated Automated Support System

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0852 Consolidated Automated Support System										
TOTAL	8,045	8,475	8,570	8,819	8,981	9,167	29,084	34,210	Cont	Cont

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Consolidated Automated Support System (CASS) project designs and develops modular constructed automated test equipment with computer-assisted, multi-functional capability based, standardized hardware and software elements. CASS responds to Fleet Commanders' expressed requirements to correct serious deficiencies in existing automatic test equipment. Program objectives are: (1) increase material readiness; (2) reduce life cycle costs through standardization; (3) improve tester sustainability at depot and intermediate maintenance levels; (4) reduce proliferation of unique test equipment and (5) provide test capability for existing and future avionics/electronics systems.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$1400) Continued development of DOD Automated Test System (ATS) standard interfaces and architectures.
- (U) (\$1200) Continued development of A Board Base Environment for Test (ABBET) standards instrument control software.
- (U) (\$ 612) Completed development of High Speed Digital Data Bus interfaces and commence development on Common Bus Emulator Test (CBET).
- (U) (\$1808) Initiated CASS station upgrades to include tunable lasers and wide-band focal plan arrays.
- (U) (\$1832) Initiated development of instrument control upgrades and virtual instruments.
- (U) (\$1193) Initiated development of advanced digital/video process.

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DATE: February 1999

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PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W0852

**PROJECT TITLE: Consolidated Automated Support
System**

2. FY 1999 PLAN:

- (U) (\$1000) Continue development of DOD ATS standard interfaces and architectures.
- (U) (\$ 862) Continue development of ABBET standards instrument control software.
- (U) (\$2000) Continue CASS station upgrades to include tunable lasers and wide-band focal plan arrays
- (U) (\$3520) Continue development of instrument control upgrades and virtual instruments.
- (U) (\$1000) Continue development of advanced digital/video process.
- (U) (\$ 93) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) (\$1100) Continue development of DOD ATS standard interfaces and architectures.
- (U) (\$1000) Continue development of ABBET standards instrument control software.
- (U) (\$2500) Continue CASS station upgrades to include tunable lasers and wide-band focal plan arrays.
- (U) (\$2805) Continue development of instrument control upgrades and virtual instruments.
- (U) (\$1165) Continue development of advanced digital/video process.

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DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W0852

PROJECT TITLE: Consolidated Automated Support System

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	8,563	8,862	8,780
(U) Appropriated Value:	8,563	8,862	
(U) Adjustments from President's Budget:	(518)	(387)	(210)
(U) FY 2000 President's Budget Submit:	8,045	8,475	8,570

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1998 decrease of \$518 thousand is due to the Small Business Innovation Research assessment of \$222 thousand; and a reduction of \$296 thousand for reprioritization of Navy requirements. FY1999 reduction of \$387 thousand was due to Congressional undistributed reductions. The FY 2000 decrease of \$210 thousand was due to pricing adjustments.

(U) Schedule: EO+ slippage due to Contractor's relocation from California to Illinois.

(U) Technical: Not Applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY:

	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
(U) APN-7 (47C2)	88,075	95,883	118,310	100,855	112,211	106,605	107,349	102,832	Cont

Related RDT&E :

(U) N/A

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DATE: February 1999

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PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT NUMBER: W0852

**PROJECT TITLE: Consolidated Automated Support
System**

(U) D. ACQUISITION STRATEGY: The strategy for Parts Obsolescence is a combined effort with the contractor, any changes to pre sent strategy will add additional risks to achieving a continuous production schedule and will cause technical uncertainty. For new technologies we will have competitive studies to ascertain the market technology, which will result in maximum information for minimum expenditure.

(U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones	III 12/98 EO+			
(U) Engineering Milestones				
(U) T&E Milestones	EO+ FOT&E OT-IIIB 6/99			
(U) Contract Milestones				

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: Feb 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W0852

PROJECT TITLE: Consolidated Automated Support System

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>
Pre-Planned Product Improvement (P3I)	FPI	TBD	835,000	225	4/99	1805	3/00	Cont	Cont
P3I	FPI	LMC	12,234	6000	1/99	4000	1/00	Cont	Cont
P3I	WX	NAWC-AD-LKE	15,539	750	12/98	1265	12/99	Cont	Cont
P3I	WX	NAWC-AD-PAX	510,200	550	12/98	750	12/99	Cont	Cont
Award Fees	N/A								
Subtotal Product Development			1,372,973	7525		7820		Cont	Cont
Remarks:									
Misc	MIPR	Gov		857	1/99	750	1/00	Cont	Cont
Subtotal Support				857		750		Cont	Cont
Remarks:									
Subtotal Test & Evaluation			0	0		0		0	0
Remarks:									
Subtotal Management			0	0		0		0	0
SBIR Assessment				93					
Remarks:									
Total Cost			1,372,973	8475		8570		CONT	CONT

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVMENTS

PROJECT NUMBER: W1041

**PROJECT TITLE: AIRCRAFT EQUIPMENT
RELIABILITY /MAINTAINABILITY IMPROVEMENT
PROGRAM (AERMIP)**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W1041 (AERMIP)	1,377	1,315	899	769	672	677	700	719	CONT	CONT
TOTAL	1,377	1,315	899	769	672	677	700	719	CONT	CONT

Quantity of RDT&E Articles

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: AERMIP is the only Navy program which provides Research, Development, Test & Evaluation (RDT&E) engineering support specifically for in-service, out-of-production aircraft equipment. AERMIP increases readiness through Reliability and Maintainability (R&M) and safety improvements to existing systems and equipments installed in Naval aircraft. It meets affordable readiness objectives by providing a cost effective solution to obsolescence problems encountered when service lives are extended, and promotes commonality and standardization across aircraft platform lines and among the services through extension of application and use of non-developmental items. AERMIP also decreases life cycle costs through reduced operational and support costs. AERMIP facilitates the Operational, Safety, and Improvement Program by applying proven low-risk solutions to current fleet problems. AERMIP also funds high priority flight testing which is not associated with any acquisition or development program under the Flight Test General (FTG) task.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$1377) Completed Replacement of Altitude Heading Reference System (AHRS) and S-3B SKYFLEX Evaluation. Continued multi-platform SKYFLEX evaluation, E2/C2 Cowling latch replacement, and initiated Multi-place Life Raft improvement program. Significantly improve identification, analysis, and evaluation of AERMIP candidates via use of Logistics Management Decision Support System (LMDSS).

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PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVMENTS

PROJECT NUMBER: W1041

PROJECT TITLE: AIRCRAFT EQUIPMENT
RELIABILITY /MAINTAINABILITY IMPROVEMENT
PROGRAM (AERMIP)

2. FY 1999 PLAN:

- (U) (\$1310) Complete E2/C2 Cowling Latch. Continue SKYFLEX evaluation, Multi-Place Life Raft Improvement Program, Airborne Air Removal Device program and extend Replacement Attitude Heading Reference System (RAHRS) application to the H53E. Initiate MD-1 Gyroscope improvement program. Investigate high value payback return on investment candidates.
- (U) (\$5) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) (\$899) Complete multi-platform application of SKYFLEX and Airborne Air Removal Device, and Multi-Place Life Raft Improvement Program. Continue with the extension of application of the RAHRS for the H53E. Initiate AN/ARC-161 Improvement Program. Investigate high value pay back return on investment candidates.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	1,424	1,351	919
(U) Appropriated Value:	1,424	1,351	
(U) Adjustments from Pres Budget:	-47	-36	-20
(U) FY 2000 President's Budget Submit:	1,377	1,315	899

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DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROGRAM ELEMENT TITLE: AVIATION IMPROVMENTS

PROJECT NUMBER: W1041

**PROJECT TITLE: AIRCRAFT EQUIPMENT
RELIABILITY /MAINTAINABILITY IMPROVEMENT
PROGRAM (AERMIP)**

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY-98 reflects a net decrease of -\$47 thousand which includes a -\$31 thousand reduction for the SBIR assessment and -\$16 thousand reduction for a minor reprogramming action. The net decrease of -\$36 thousand in FY-99 represents a -\$30 thousand reduction as a Congressional adjustment, -\$3 thousand reduction for civilian personnel adjustment, and -\$3 thousand reduction as an economic adjustment. The net decrease of -\$20 thousand in FY 2000 represents a -\$18 thousand reduction for rate adjustments and a -\$2 thousand for a minor reprogramming action.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

(U) D. ACQUISITION STRATEGY: This is a non-ACAT program with no specific acquisition strategies.

(U) E. SCHEDULE PROFILE: Not applicable

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DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7 **PROGRAM ELEMENT: 0205633N** **PROJECT NUMBER: W1355**
PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS **PROJECT TITLE: AIRCRAFT ENGINE CIP**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W1355 Aircraft Engine CIP										
TOTAL	35,388	46,167*	39,714	47,526	41,628	37,373	73,135	84,162	CONT.	CONT.

Quantity of RDT&E Articles: Not applicable

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Aircraft Engine CIP provides the only source of critical design and development engineering support to resolve safety, reliability and maintainability deficiencies of in-service Navy aircraft propulsion systems. The highest priority issues CIP addresses concern safety-of-flight deficiencies which account for approximately 80% of CIP efforts. The program also corrects service-revealed deficiencies, improves Operational Readiness (OR) and Reliability and Maintainability (R&M), and reduces platform Life Cycle Cost (LCC). Budgets are allocated across platform-specific teams and multi-platform product support teams based upon long term strategies to achieve safety and affordable readiness goals; the R-3 exhibit details annual portions of those long-term plans. CIP tasks have reduced the rate of in-flight aborts, safety incidents, non-mission capable rates, scheduled and unscheduled engine removals, maintenance work hours, and overall cost of ownership. This is accomplished through the maintenance and validation of specification performance, testing to qualify engineering changes, verifying life limits, and improving the inherent reliability of the propulsion system as an integral part of Reliability Centered Maintenance (RCM) initiatives. Historically, the missions, tactics, and environmental exposure of military aircraft systems change to meet new threats or operational demands, and often result in unforeseen problems, which if not corrected, can cause critical safety/readiness degradation, such as those experienced during DESERT SHIELD/DESERT STORM operations due to sand erosion. In addition, new problems arise through actual use during deployment of the aircraft. Development programs, while geared to resolve as many problems as possible before deployment, cannot duplicate actual operations or account for the vast array of environmental and usage variables, particularly when aircraft missions vary from those the aircraft was designed to perform. Therefore, it has been found that CIP can provide an immediate engineering response to these flight-critical problems and accelerated engine testing can avoid potential problems. CIP starts after development and Navy acceptance of the first production article and addresses usage and life problems not covered by warranties. CIP addresses engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, and fuel and lubricant systems. CIP efforts continue over the system's life, gradually decreasing to a minimum level sufficient to maintain the reliability, and decrease the operating costs, of older inventory. CIP is a highly leveraged and cooperative tri-service program with Foreign Military Sales participation.

*FY-99 budget includes a Congressional add of \$2,000K for Eddy Current Sensors executed under project W2663.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1998 ACCOMPLISHMENTS:

- (U) (\$32,095) Platform-specific efforts.
- T56 engine (P-3, E-2, C-2, C-130) Improved the maintenance plan, qualified alternative sources of parts, completed fuel nozzle redesign, continued propeller integration efforts to reduce Non Mission Capable rates, evaluated USAF JP-8 fuel additives.
- E-2/C-2/C-130 Identified propeller assembly fatigue failures and implemented inspection procedures in the Fleet to eliminate risk, increased electrical capacity and performance; eliminated starter failures; continued propeller redesign efforts, investigated cause of hot section damage, began generator improvement efforts.
- S-3 Continued efforts to reduce the number of bare firewalls, completed mission analysis, continued resolution of single engine rate of climb issues, developed field hardware inspection plan.
- F/A-18C/D Redesigned F404 flameholder configuration which will result in lower operating costs; resolved in-flight engine shut downs (a top safety concern of the F-18 Systems Safety Working Group) by designing tantalum-tantalum capacitors for circuit boards of the engine control; continued efforts to redesign aft cooling plate, low pressure turbine nozzle, and fan stage 3 shroud, conducted life management issues including the fleet leader program, engine analysis studies and improved analytical models.
- F-14A Implemented Service Repair Development which incorporated state of the art maintenance changes which simplified tasks and reduced cost while improving safety and reliability. Addressed the top two reasons for unscheduled engine removals, sustaining engineering efforts and new problem resolution.
- F-14B/D Continued analysis of safety of flight issues including second stage compressor failure, mission analysis/life management critical engine rotating and accessory parts; analyzed and determined cause of variable stator vane failure.
- Mature Aircraft (EA-6B, T-2) Addressed the top four readiness degraders, the top two Aviation Depot Level Repairable (AVDLR) costs, troubleshooting procedures, and electrical system reliability and durability.
- H-2/H-60 Analyzed flameout and rollback safety issues, analyzed life management issues affecting safety and affordability, investigated and diagnosed Hydro-mechanical Unit and Engine Control Unit rejections off-wing and power take-off shaft wear anomalies. Established Mission Profile Data Collection and Dynamic Component Life Limit efforts.
- AV-8B Addressed top safety of flight issues including the LPC 2/3 Spacer, F402-RR-406 deficient refinery process, engine removal drivers, mission failure drivers and digital engine control unit. Redesigned LPC 2/3 spacer component, researched, tested, defined, and rectified the deficient refinery process and returned the -406 Fleet to operation and deployable status.
- H-53/H-46/H-3 Performed life management analysis on Auxiliary Power Unit uncontained compressor wheel failures which resulted in updated life limits, rotating hardware redesigns, spin pit design validation testing and a risk mitigating implementation plan, performed Reliability Centered Maintenance analysis to baseline the material condition of engine hardware.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

1. FY 1998 ACCOMPLISHMENTS: (CONT)

- H-1 Responded to and evaluated AH-1W flameout issues, Class A UH-1N mishap, Class C UH-1N mishap control purchasing issues, UH-1N tail rotor drive system, and AH-1W and UH-1N battery and starter issues. Analyzed and conducted testing on improved tail rotor drive system available on the Bell Model 412 to alleviate a "Top Ten" safety concern as ranked by the OAG and a "Top Three" safety concern as ranked by Navy UH-1N System Safety Working Group.
- T-45 Completed second year efforts on a four year engine surge recovery program. Provided inlet compatibility wind tunnel tests and conducted investigations. Addressed reliability issues including hi-pressure turbine nozzle guide vane thermal distress and high pressure compressor stator failures.
- (U) (\$3,293) Multi-Platform Product Support Completed engineering improvements for F-14 and S-3 compatible Constant Speed Drive-Integrated Drive Generator. Completed several battery improvement projects and introduced Sealed Lead-Acid aircraft batteries which increased the maintenance interval of vented lead-acid technology from 30-90 days up to 30 months on F/A-18, F117, and H-46 aircraft. Implemented improved battery vents caps which double the maintenance intervals of vented nickel-cadmium batteries in the Fleet. Completed qualification and test flying of two sizes of Low Maintenance Flooded vented nickel-cadmium batteries which will increase the on-wing of nickel-cadmium batteries from 56-112 days to a minimum of one year. Improved power circuit protection, identified new circuit breakers which will identify breaks in insulation when they occur and aided in the identification of problem wiring prior to aircraft damage. This early identification will reduce wiring repair costs and realize a major safety improvement. Developed and maintained a broad qualified products list which assures product availability, maximum competition and minimum price. Evaluated numerous new corrosion inhibited turbine engine lubricants. Performed investigation on the +100 fuel additive developed by the USAF.

2. FY 1999 PLAN:

- (U) (\$37,738) Platform-specific efforts.
- T56 engine (P-3, E-2, C-2, C-130) Continue propeller integration efforts with potential propeller designs, perform engine hot section corrosion and fatigue analysis, and initiate bearing improvements.
- E-2/C-2/C-130 Continue propeller improvement program, eliminate starter failures, continue generator improvement program to triple durability.
- S-3 qualify lube system design improvements, conduct control system reliability and maintainability analysis, validate and implement recommended part life changes. Complete resolution of single engine rate of climb issues. Minimize number of bare firewalls.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

2. FY 1999 PLAN: (CONT)

- F/A-18C/D Continue efforts on aft cooling plate, low pressure turbine nozzle and fan stage 3 shroud redesigns. Continue life management issues including the fleet leader program, engine analysis studies, and improved analytical models, analyze engine performance data and update mission analysis.
- Mature Aircraft Address the top readiness degraders and AVDLR costs; perform an Accelerated Simulated Mission Endurance Test on the J52 engine (EA-6B), correct deficiencies in #3 hub, study "tired iron" issues and identify future obsolescence problems.
- H-2/H-60 Introduce the improved Digital Electronic Control Unit (DCU) to the H-60 fleet, develop I-level screening techniques for the DECU and Hydro-Mechanical units, continue the Advanced Helicopter Transmission Lubricant Program, extend transmission component lives, increase readiness by reducing corrosion, continue Mission Profile Data Collection and Dynamic Component Life Limit efforts.
- AV-8B Continue efforts to address safety of flight issues, engine removal drivers, and mission failure drivers. Continue efforts on digital engine control unit; resolve power lever actuator vibration problem
- H-53/H-46/H-3 Perform analysis on the top cause for engine removals; transition program to reliability-centered maintenance; create depot goals to improve compressor performance and engine power, resolve oil consumption and leakage problems, and improve on wing times.
- H-1 Continue improvements to tail rotor drive system. Investigate primary safety issues; flameouts and rollbacks.
- T-45 Implement third year of the four year engine surge recovery program, address platform safety, specification compliance, mission profile updates, and life cycle management.
- F-14A Perform minimal level of sustaining engineering.
- F-14B/D Improve propulsion system safety through an active life management program for critical rotating components, reduce the engine Non-recoverable In-Flight Shutdown Rate by 75% by 2003, reduce the propulsion system related mission abort rate by 50% by 2003.
- F/A-18E/F and V-22 Initiate CIP programs addressing propulsion systems such as electrical and fuel systems not covered by Power by the Hour programs and other support programs with the exception of fuel system, fuel pump, and engine fuel controller analysis on the F-18E/F and the Nacelle blower fan bearing, drive system chip detector, and drive shaft engine analysis on the V-22..
- (U) (\$7,682) Multi-Platform Product Support Teams Initiate projects designed to provide common support to multiple platforms in the areas of improved drive systems, secondary power and mechanical systems; improved tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improved products and processes for fuels, lubricants, and refueling equipment; improved blade and vane repair processes and life cycle support; and improved electrical system product support and battery systems. Conduct study and analysis of Eddy Current Sensors.
- (U) (\$747) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

3. FY 2000 PLAN:

- (U) (\$35,345) Platform-specific efforts.
- T56 engine (P-3, E-2, C-2, C-130) Maintain safety margins by investigating turbine coatings and develop new designs, continue propeller integration efforts with potential propeller designs, perform engine hot section corrosion and fatigue analysis, and continue bearing improvements.
- E-2/C-2/C-130 Continue propeller safety improvement program, initiate pump housing improvement, perform Hub Internal Supply System development, eliminate starter failures, continue generator improvement program to triple durability.
- S-3 Establish and implement an engineering plan to improve TF34 reliability, perform analysis to obtain better performance from existing hardware, redesign low reliability parts, conduct control system reliability and maintainability analysis, validate and implement recommended part life changes.
- F/A-18C/D Identify obsolescence problems, continue efforts on aft cooling plate, low pressure turbine nozzle and fan stage 3 shroud redesigns. Continue life management issues including the fleet leader program, engine analysis studies, and improved analytical models, analyze engine performance data and update mission analysis.
- Mature Aircraft Address the top readiness degraders and AVDLR costs; implement efforts on the J52 engine (EA-6B) ASMET test, correct deficiencies in #3 hub, continue to study and implement solutions to "tired iron" issues and future obsolescence problems.
- H-2/H-60 Implement I-level screening techniques for the DECU and Hydro-Mechanical units, continue the Advanced Helicopter Transmission Lubricant Program, extend transmission component lives, increase readiness by reducing corrosion, continue Mission Profile Data Collection and Dynamic Component Life Limit efforts.
- AV-8B Address top readiness degraders and AVDLR costs; safety of flight issues, engine removal drivers, and mission failure drivers, assess life management program issues for engine components.
- H-53/H-46/H-3 Continue efforts on the top cause for engine removals; complete transition of program to reliability-centered maintenance; implement goals at depot level to improve compressor performance and engine power, resolve oil consumption and leakage problems, and improve on wing times.
- H-1 Address top safety concerns as ranked by the OAG and System Safety Working Group, update Navy maintenance manuals, continue to improve time-between-overhaul and reduce impact of high-time parts, continue improvements on tail rotor drive system.
- T-45 Complete four year engine surge recovery program, address platform safety, increase predicted part life confidence, provide mission profile updates and life cycle management.
- F-14A Perform minimal level of sustaining engineering to address safety-of-flight issues.
- F-14B/D Address extension of component life and the reduction of maintenance hours, improve propulsion system safety through an active life management program for critical rotating components, reduce the engine Non-recoverable In-Flight Shutdown Rate by 75% by 2003, reduce the propulsion system related mission abort rate by 50% by 2003.

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

3. FY 2000 PLAN: (CONT)

- F/A-18E/F and V-22 Continue initiation of CIP programs addressing propulsion systems such as electrical and fuel systems not covered by Power by the Hour programs and other support programs. Address durability improvements identified during qualification testing, continue the life cycle management program, continue "lead the fleet" testing to identify potential deficiencies prior to manifestation in fleet.
- (U) (\$4,369) Multi-Platform Product Support Teams Continue projects designed to provide common support to multiple platforms in the areas of improved drive systems, secondary power and mechanical systems; improved tools for performance analysis, modeling and simulation, diagnostics, engine reliability assessment, and structural integrity; improved products and processes for fuels, lubricants, and refueling equipment; improved blade and vane repair processes and life cycle support; and improved electrical system product support and battery systems.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	36,484	48,402	52,439
(U) Appropriated Value:	37,607	48,402	
(U) Adjustments from President's Budget:	-1,096	-2,235	-12,725
(U) FY 2000 President's Budget:	35,388	46,167	39,714

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EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: FEBRUARY 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER: W1355

PROGRAM ELEMENT TITLE: AVIATION IMPROVEMENTS

PROJECT TITLE: AIRCRAFT ENGINE CIP

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1998 decrease reflects -\$1,065 thousand reduction for Small Business Innovation Research assessment and a -\$31 thousand reduction for minor balancing adjustments. FY 1999 decrease reflects a -\$1,000 thousand reduction for VECTOR offsets, a -\$3,000 thousand Congressional reduction to limit growth, a \$2,000 thousand Congressional increase for Eddy Current Sensors, a -\$109 thousand Congressional reduction for revised economic assumptions, and a -\$126 thousand reduction for balancing and rate adjustments. FY2000 decrease reflects a -\$12,000 thousand reduction to the overall Aircraft Engine CIP program, a -\$627 thousand reduction for rate adjustments, and a -\$98 thousand reduction for minor reprogrammings.

(U) Schedule: Postponement of ASMET test for the F-18 aircraft and deferment of Lead the Fleet efforts including analytical condition inspections, service evaluations, and threshold sampling. Reduce scope of FY99 H-1 efforts to eliminate analysis of top readiness degraders and high-time parts which support goal of improving time-between-overhaul; defer portion of tail rotor drive system improvements with completion of effort in FY02 versus FY01. F-18 E/F and V-22 CIP efforts to address propulsion system integration issues uncovered during the flight test programs and establish methodologies for core program metrics will be delayed. Impact on Reliability and Maintainability efforts such as deferment of plans for product improvements, designs to increase time on wing, reduce mean time between failure, and reduce operating and support costs.

(U) Technical: Increase aircraft flight safety risk for the F-18 E/F and V-22 during Op Eval. Increase overall production retrofit costs for needed improvements. Cannot expand evaluation and verifications of redesigns due to deferment of test and delays and elimination of R&M projects. Cannot fully explore affordable readiness or properly document lessons learned and realize reliability growth.

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable.

Related RDT&E

(U) P.E. 0203752A (Aircraft Engine CIP Army)

(U) P.E. 0207268F (Aircraft Engine CIP Air Force)

(U) P.E. 0603217N (Aircraft System Advance Tech. Dev.)

(U) D. ACQUISITION STRATEGY: Not applicable

(U) E. SCHEDULE PROFILE: Not Applicable

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER:

W1355

PROJECT TITLE:

AIRCRAFT ENGINE CIP

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
PRODUCT DEVELOPMENT										
MAJOR EFFORTS (\$1.0M OR MORE)										
F110 Engine Program										
GE F3365795C0055	SS/CPAF	Ohio	8,186	2,200	12/98	2,400	12/99	CONT.	CONT.	
Award Fees				(220)		(240)				
F402 ENGINE PROGRAM										
N0001996C0172 RR	SS/CPAF	BRISTOL ENG	6,153	2,000	1/99	1,805	12/99	CONT.	CONT.	
Award Fees				(160)		(144)				
N0001996C0134 UK	SS/CPFF	BRISTOL ENG	5,497	1,990	1/99	1,750	12/99	CONT.	CONT.	
F404//T58/T64 ENGINE PROGRAM										
N0001998C0007 GE	SS/CPFF	LYNN MA	5,333	6,500	10/98	5,640	10/99	CONT.	CONT.	
N0001998C0054 GE	SS/CPFF	LYNN MA	0	2,300	10/98	1,400	10/99	CONT.	CONT.	
J52 ENGINE PROGRAM										
N0001998C0054 P&W	SS/CPFF	FL	1,901	2,010	11/98	2,800	11/99	CONT.	CONT.	
T56 ENGINE										
NEW CONTRACT TBD ALLISON	SS/CPFF	INDIANA	0	1,670	1/99	1,905	1/00	CONT.	CONT.	
F405 ENGINE PROGRAM										
N0001997C0112 RR	SS/CPAF	BRISTOL ENG	1,900	1,440	1/99	1,204	12/99	CONT.	CONT.	
Award Fees				(115)		(96)				
F/A 18 E/F PROPULSION PROGRAM										
NEW CONTRACT TBD GE	SS/CPFF	LYNN MA	0	1,000	3/99	1,620	10/99	CONT.	CONT.	

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER:

W1355

PROJECT TITLE:

AIRCRAFT ENGINE CIP

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
T700 ENGINE PROGRAM DAAJ0997C0131 GE	SS/CPFF	LYNN MA	1,092	1,000	12/98	1,000	12/99	CONT.	CONT.	
TF34 ENGINE PGPROGRAM F1460895C1461 GE	SS/CPFF	LYNN MA	2,420	700	10/98	720	10/99	CONT.	CONT.	
V22 PROPULSION PROGRAM NAVAIR CONTRACT GE TBD	SS/CPFF	LYNN MA	0	1,000	3/99	1,267	12/99	CONT.	CONT.	
PROPS PROGRAM NAVAIR CONTRACT HAM STANDARD	SS/CPFF		0	2,895	11/98	1,500	10/99	CONT.	CONT.	
CONTRACTS UNDER \$1.0M . AGGREGATE TOTAL	VARIOUS	VARIOUS	9,159	2,000	10/98	500	10/99	CONT.	CONT.	
LAB/FIELD ACTIVITY (\$1.0M OR MORE)	WX	NAWCAD PAX	60,650	14,023	10/98	12,129	10/99	CONT.	CONT.	
OTHER IN HOUSE SUPT <\$1.0M	VARIOUS	VARIOUS	11,946	1,130	10/98	780	10/99	CONT.	CONT.	
GFP FUEL MD INCREMENTAL			2,885	460	10/98	350	10/99	CONT.	CONT.	
Subtotal Project Development			117,122	44,318		38,770		CONT.	CONT.	

Remarks
Percent of award fee that was actually awarded in PY was 97%.

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, Page 24 of 25)

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EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0205633N

PROJECT NUMBER:

W1355

PROJECT TITLE:

AIRCRAFT ENGINE CIP

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	Cost to Complete	Total Cost	Target Value of Contract
SUPPORT										
OTHER IN HOUSE SUPPORT <\$1.0M			1,747	750	10/98	649	10/99	CONT.	CONT.	
Subtotal Support			1,747	750		649		CONT.	CONT.	

Remarks

TEST AND EVALUATION

OTHER IN HOUSE <\$1.0M										
AGGREGATE TOTAL	VARIOUS	VARIOUS	2,144	150	10/98	100	10/99	CONT.	CONT.	
Subtotal Test & Evaluation			2,144	150		100		CONT.	CONT.	

Remarks

MANAGEMENT										
OTHER IN HOUSE <\$1.0M	VARIOUS	VARIOUS	0	202	10/98	195	10/99	CONT.	CONT.	
Subtotal Management			0	202		195		CONT.	CONT.	

Remarks

SBIR Assessment

747

Total Cost			121,013	46,167		39,714		CONT.	CONT.	
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