EXHIBIT R-2, RDT&E Budget Item Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7						R-1 ITEM NOMENCLATURE 0205633N, AVIATION IMPROVEMENTS		
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
Total PE Cost	95.667	99.416	135.840					
0601 ACFT HANDLING & SERVICE EQUIPMENT	2.508	3.212	3.269					
0852 CONSOLIDATION AUTOM SPT SYS	7.307	8.922	27.704					
1041 ACFT EQ REPL/MAINT PROG	2.421	3.690	4.105					
1355 A/C ENG COMP IMP (CIP)	56.277	59.421	78.340					
3189 DIGITAL I-TER	5.078							
3190 MULTI-PURPOSE BOMB RACKS	3.323	11.845	22.422					
9999 CONGRESSIONAL ADDS	18.754	12.326						

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project 0601 - Common Ground Equipment is a Naval Aviation Project to apply new technology to common support equipment necessary to support multiple aircraft. Project 0852 - Consolidated Automated Support System (CASS) is a standardized Automated Test Equipment (ATE) with computer assisted, multi-function capabilities to support the maintenance of aircraft subsystems and missiles. Project 1041 - Aircraft Equipment Reliability/Maintainability Improvement Program (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. Project 1355 - Aircraft Engine Component Improvement Program (CIP) develops reliability and maintainability (R&M) and safety enhancements for in-service Navy aircraft engines, transmissions, propellers, starters, auxiliary power units, electrical generating systems, fuel systems, fuels, and lubricants. Project 3189 - Digital I-TER will develop an increased capability to the existing BRU-42 Improved Triple Ejector Rack (ITER) for the AV-8B. Project 3190 - is the Multi-Purpose Bomb Rack (MPBR). The MPBR will replace the BRU-41/42/33/55 and provide use for both tactical and training stores on one common rack. The MPBR will be integrated on the F/A-18E/F as part of this project.
Project 9999 is Congressional Adds.

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2008	FY 2009	FY 2010
Previous President's Budget	117.805	122.906	105.116
Current BES	95.667	99.416	135.840
Total Adjustments	-22.138	-23.490	30.724

Summary of Adjustments			
Congressional Rescissions			
Congressional Adjustments	-11.600	-23.219	
SBIR/STTR/FTT Assessments	-0.902		
Program Adjustments	-9.516		30.755
Rate/Misc Adjustments	-0.120	-0.271	-0.031
Subtotal	-22.138	-23.490	30.724

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7	R-1 ITEM NOMENCLATURE 0205633N, AVIATION IMPROVEMENTS

Schedule:

Project 0601 - The Turboprop Engine Test Instrumentation (TETI) Team conducted a technology assessment of TETI requirements compared to the existing Shaft Engine Test Instrumentation (SETI) Engine Test System capability and determined that the SETI System met all data acquisition, test and measurement requirements of TETI. Therefore the decision was made to utilize the SETI hardware for the TETI Program and develop the Test Program Set (TPS) software for each turboprop engine variant utilizing in-house engineering at NAVAIR Lakehurst. This technology assessment and decision process to use SETI and develop TPS's in-house caused the two quarter slip in the TETI schedule. However, this acquisition strategy is expected to yield cost savings and a reduction in the TETI schedule going forward, by eliminating the contracting process and contractor monitoring required for development of TETI and each TPS. During the TETI requirements technology assessment that was conducted in FY07, it was determined that the existing SETI Engine Test System hardware would meet the data acquisition, test and measurement requirements of TETI. Therefore, an ECP development effort is being conducted to implement TETI. The development of the Test Program Set (TPS) software for each turboprop engine variant and any additional hardware will be accomplished utilizing in-house engineering at NAVAIR Lakehurst. Due to the anticipated complexity of the Next Generation Munitions Handler (NGMH), and the potential for the production contract award going to a different contractor than the original developer (Foster Miller Corporation), additional time was incorporated into the schedule to require the production contractor to build and successfully performance test several Low Rate Initial Production (LRIP) units before Full Rate Production (FRP) is initiated. At the FY08 Support Equipment Prioritization Conference, held March 2008, the Shipboard Firefighter Vehicle (SFV) Program was shifted 18 months earlier than originally reported/planned. Schedules added for Aircraft Spotting Dolly (ASD) and Hydraulic Test Stand (HTS).

Project 0852 - Schedule change to better leverage the Agile Rapid Global Combat Support (ARGCS) ACTD Technology.

Project 1041 - Systems Engineering Revitalization: includes additional dollars for Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN(RDA)) for a Navy-wide systems engineering initiative. Several projects starting in FY10 were results of investigations to be high value on return on investment.

Project 1355 - Not Applicable

Project 3189 - Digital-ITER milestone schedule has changed due to the realignment of funds to the AV-8B program (PE 0604214N, Project 2634). The Digital-ITER program funds development efforts to upgrade the bomb rack. Due to the changes in acquisition strategy the funding realigned to the AV-8B program is for hardware development and integration efforts.

Project 3190 - The Multi Purpose Bomb Rack (MPBR) was designated as a "new start" program for FY2008. Delays caused a restructure of the effort. SubsequentCongressional marks further pushed MS B into the 4Q FY09 and reduced the threshold aircraft platform from F/A-18A-F to F/A-18E/F only. RFP release to occur in April 2009 with contract award planned in the 4Q 2009.

Project 9999 - Congressional Adds.

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 0601 , COMMON GROUND EQUIPMENT			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
0601 , COMMON GROUND EQUIPMENT	**2.508**	**3.212**	**3.269**					
RDT&E Articles Qty	**2**	**2**	**3**					

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 multiple systems/aircraft within the Navy. The common support equipment items developed with this budget are briefed to the Air Force, Army and Coast Guard for possible use in joint procurement in the production phase.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA7	0205633N, AVIATION IMPROVEMENTS	0601, ACFT HANDLING & SERVICE EQUIPMENT

B. Accomplishments/Planned Program

Next Generation Munitions Handler (NGMH)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.022	0.507	1.700	
RDT&E Articles Quantity	1	1	1	

R&D program to develop robotic weapons loader for both ship and shore with primary focus on targeting future weapons and aircraft. Plan is to support CVNX initiatives and to back-fit current CVs and amphibious ships. Utilize technology features developed under NGMH program. One lab prototype will upload/download munitions in support of sea-based aviation, specifically the CVN-21 environment. It will be a self-powered diesel/electric unit with human amplification technology. Newly developed high-torque electric actuator/motors will provide the robotics. Variable geometry Ionator wheels will provide the mobility for the vehicle. Self diagnostics for maintenance analysis will be included for the design.

Tuboprop Engine Test Instrumention (TETI)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.486	2.355	0.628	
RDT&E Articles Quantity	1	1	1	

The Turboprop Engine Test Instrumentation (TETI) program objective is to provide an integrated computer based measurement and automation system for Intermediate Maintenance level testing of Navy/Marine Turboprop engines. The acquisition approach is to develop, acquire, validate, deploy and support production configurations of TETI and Test Program Sets (TPS), utilizing the existing Shaft Engine Test Initiative (SETI) technology, and integrate this capability into existing land based engine test systems. This enhanced capability will allow for full performance engine testing of the T56 Series Turboprop engines. An ECP will be developed to upgrade the existing engine test systems.

Shipboard Firefighting Vehicle (SFV)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		0.350	0.941	
RDT&E Articles Quantity			1	

The Shipboard Firefighting Vehicle (SFV) program objective is to provide a safe reliable and maintainable way to support air capable ships with flight deck fire suppression during flight operations. The acquisition approach is to develop, acquire, validate, deploy and support production utilizing the lessons learned from the current firefighting vehicle and new emerging technology. This will enable integration of this capability into a new firefighting vehicle, which will be fully capable to support the current and future flight deck fire suppression missions.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVMENTS	0601, ACFT HANDLING & SERVICE EQUIPMENT

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2008	FY 2009	FY 2010
APN 070500 Ground Support Equipment	260.702	243.458	211.928

Related RDT&E: Not Applicable

D. ACQUISITION STRATEGY:

This is a non ACAT program. Field activities propose tentative 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.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **May 2009**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 0601, ACFT HANDLING & SERVICE EQUIPMENT						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Primary Hardware Dev. (AC/SC)	TBD	TBD										
Primary Hardware Dev.-NGMH	C-CPFF	FOSTER-MILLER, INC ,MA	7.095	0.250	03/09	1.000	03/10					
Primary Hardware Dev.-SFV	C-CPFF	TBD				0.611	03/10					
Primary Hardware Dev.-TETI	VARIOUS	VARIOUS	1.636	1.996	03/09	0.300	03/10					
Primary Hardware Dev.-TETI	VARIOUS	VARIOUS	0.566									
Systems Engineering (AC/SC)	WX	NAWCD, LAKEHURST, NJ										
Systems Engineering -SFV	WX	NAWCD, LAKEHURST, NJ		0.350	03/09	0.330	03/10					
Systems Engineering- TETI	WX	NAWCD, LAKEHURST, NJ	0.685	0.359	03/09	0.328	03/10					
Subtotal Product Development			9.982	2.955		2.569						

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: **May 2009**					
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 0601, ACFT HANDLING & SERVICE EQUIPMENT							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Development Support												
Development Support Equip, -NGMH	WX	VARIOUS	0.069			0.350	03/10					
Development Support Equip, -NGMH	C-CPFF	NAWCAD, LAKEHURST NJ	7.702	0.257	VARIOUS	0.350	03/10					
Subtotal Support			7.771	0.257		0.700						

R-1 SHOPPING LIST - Item No. 178

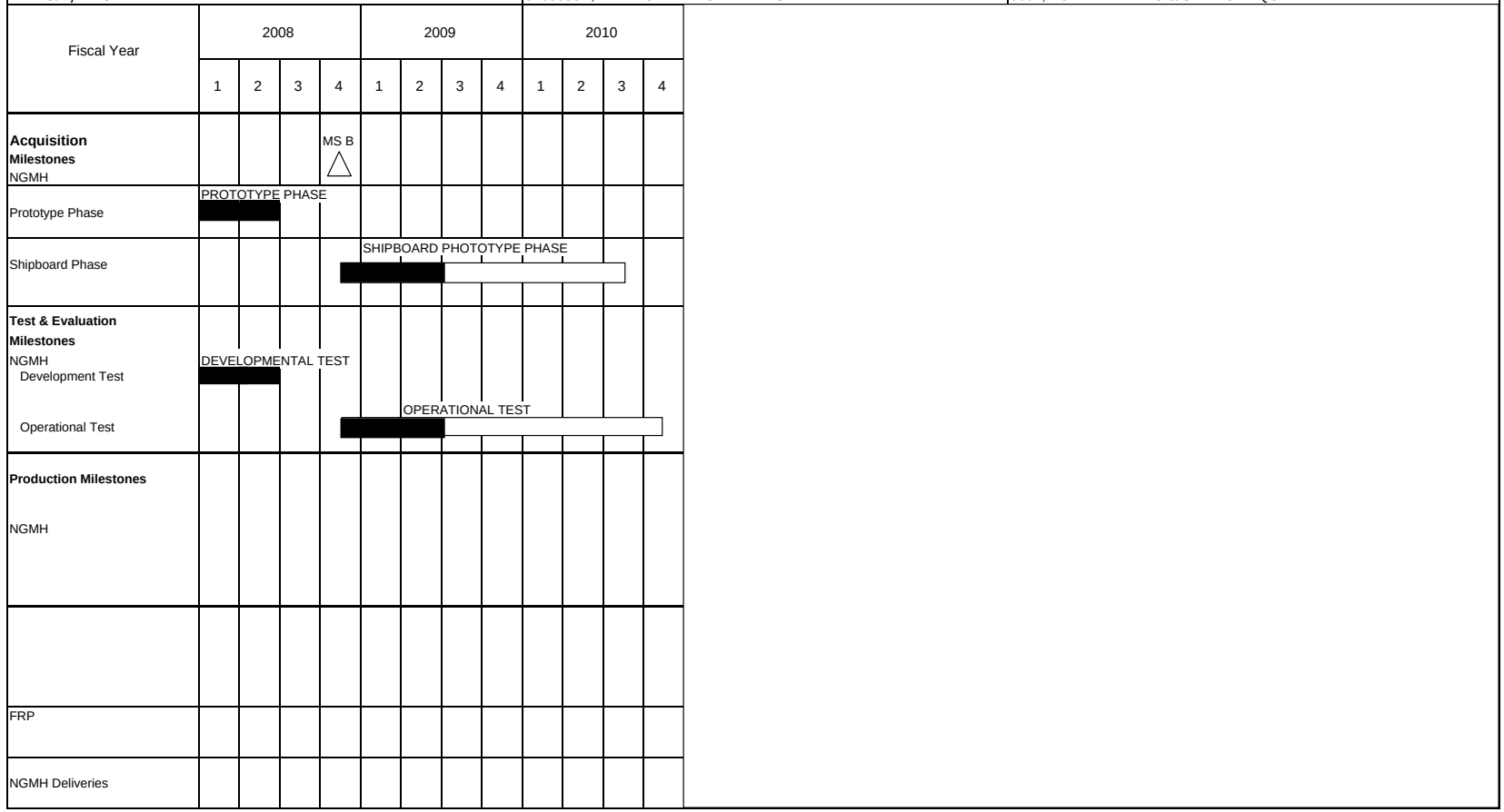
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **May 2009**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 0601, ACFT HANDLING & SERVICE EQUIPMENT							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Test & Evaluation -EA	Various	Various	0.500									
Subtotal T&E			0.500	0.000		0.000						
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000						
Remarks:												
Total Cost			18.253	3.212		3.269						
Remarks:												

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

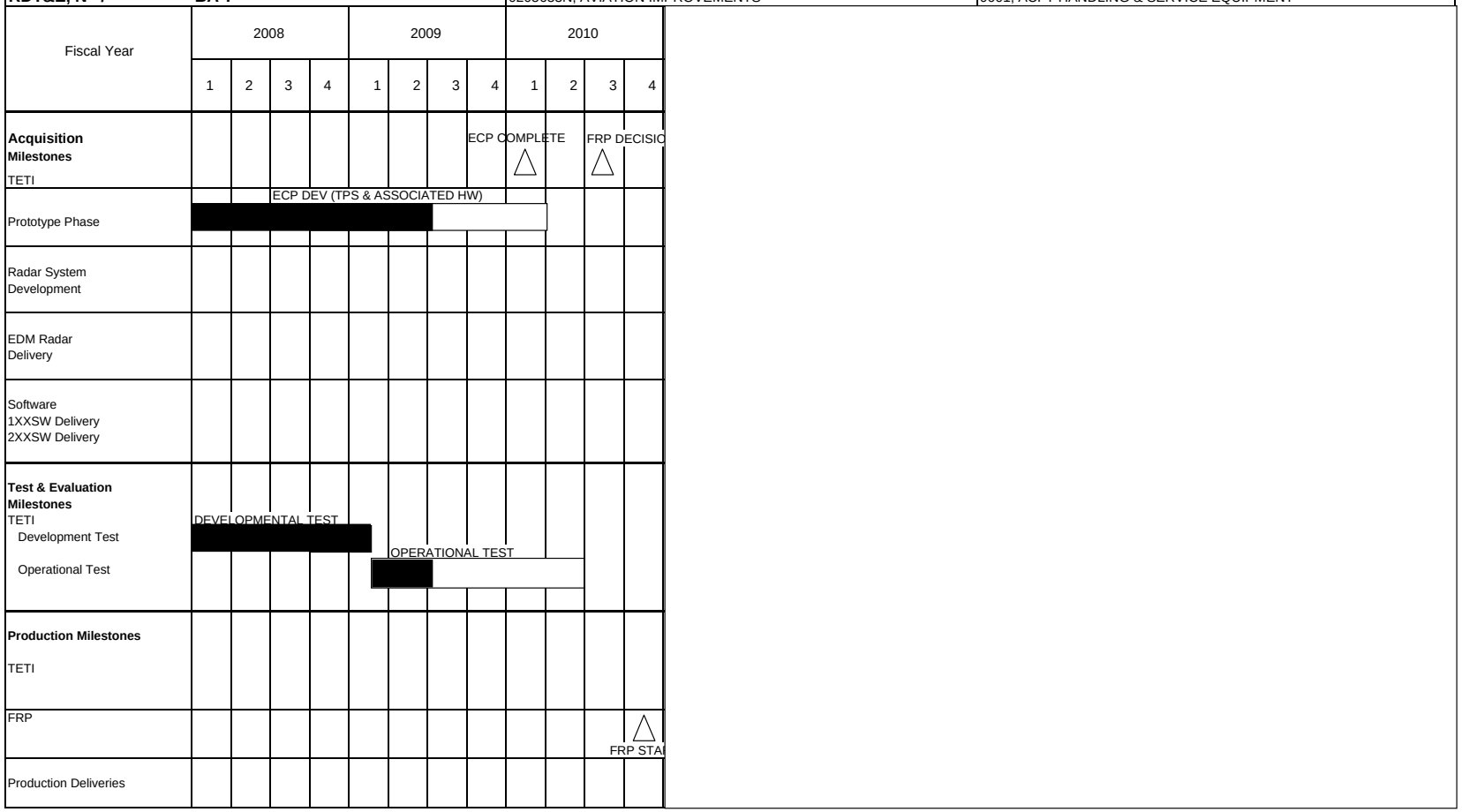
EXHIBIT R4, Schedule Profile			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7		0205633N, AVIATION IMPROVEMENTS	0601, ACFT HANDLING & SERVICE EQUIPMENT



R-1 SHOPPING LIST - Item No.178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7		0205633N, AVIATION IMPROVEMENTS	0601, ACFT HANDLING & SERVICE EQUIPMENT



R-1 SHOPPING LIST - Item No.178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / **BA-7**		0205633N, AVIATION IMPROVEMENTS	0601, ACFT HANDLING & SERVICE EQUIPMENT

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones SFV					MS B △							
Prototype Phase								PROTOTYPE PHASE				
Test & Evaluation Milestones SFV												
Development Test							DEVELOPMENTAL TEST					
Operational Test										OPERATIONAL T		
Production Milestones SFV (P-25-REP)												
FRP												
SPV Deliveries												

R-1 SHOPPING LIST - Item No.178

CLASSIFICATION:

Exhibit R-4a, Schedule Detail			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 7**	PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS		PROJECT NUMBER AND NAME 0601, ACFT HANDLING & SERVICE EQUIPMENT
Schedule Profile	FY 2008	FY 2009	FY 2010
Schedule Profile			
Schedule Profile - TETI			
ECP Complete			1Q
ECP (TPS & Associated Hardware)	1Q-4Q	1Q-4Q	1Q
Developmental Test	1Q-4Q	1Q	
Operational Test		1Q-4Q	1Q-2Q
Full Rate Production (FRP) Decision			3Q
Full Rate Production (FRP) Start			4Q
Schedule Profile - NGMH			
Prototype Phase	1Q-2Q		
Shipboard Prototype Phase	4Q	1Q-4Q	1Q-3Q
Milestone B	4Q		
Developmental Test	1Q-2Q		
Milestone C (MS C)			
Operational Test	4Q	1Q-4Q	1Q-4Q
Start Low-Rate Initial Production (LRIP) I			
Low-Rate Initial Production (LRIP) 3 Delivery			
Full Rate Production (FRP) Decision			
Full Rate Production (FRP) Start			
Schedule Profile - SFV			
Prototype Phase		1Q-4Q	1Q-4Q
Milestone B		1Q	
Developmental Test		3Q-4Q	1Q-4Q
Milestone C (MS C)			
Operational Test			2Q-4Q
Start Low-Rate Initial Production (LRIP) I			
Full Rate Production (FRP) Decision			

R-1 SHOPPING LIST - Item No.178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVMENTS				PROJECT NUMBER AND NAME 0852, CONSOLIDATED AUTOM SPT SYS			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
0852, CONSOLIDATED AUTOM SPT SYS	**7.307**	**8.922**	**27.704**					
RDT&E Articles Qty	**3**	**2**	**2**					

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Consolidated Automated Support System (CASS) project designs and develops modular automated test equipment with computer-assisted, multi-function test capability, standardized hardware, and standard 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; (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 emerging avionics/electronics aircraft weapon systems.

The CASS (Consolidated Automated Support System) Modernization project objectives are to modernize legacy CASS systems via technology insertion to overcome obsolescence issues and to mature technologies in preparation of the emerging eCASS (electronic Consolidated Automated Support System) project.

The eCASS (electronic Consolidated Automated Support System) project is the system design and development of the latest generation of the US Navy's CASS family of automatic test systems. The legacy CASS system was designed and developed in the 1980's and commenced fielding in 1992. As such, it is reaching the end of its useful life due to obsolescence issues. eCASS is the replacement system for legacy CASS systems, which provides Naval aircraft avionics component maintenance and repair support at Intermediate and Depot maintenance facilities both shore-based and afloat. As a CASS replacement program, the eCASS program objectives remain the same as that of CASS. Specifically: (1) increase material readiness; (2) reduce life cycle costs; (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 emerging avionics/electronics aircraft weapon systems.

The Test Technology Development project involves analysis, application, maturation, integration and testing of emerging electronic, mechanical and optical test technologies for potential military utility in support of Naval avionics testing and repair. Specific technologies being developed include synthetic instruments, new Advanced Targeting Forward Looking Infrared (ATFLIR) electro-optics capabilities, multi-analog test capability to enable functional testing, and modernization elements for the CASS family of automatic test systems.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	0852, CONSOLIDATED AUTOM SPT SYS

B. Accomplishments/Planned Program

CASS Station Upgrades	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.200	0.200		
RDT&E Articles Quantity	1	1		

Provides technologies for upgrading CASS stations to test emerging weapon system requirements. Includes development of new test capability and extending existing range accuracies in the time and frequency domains to support low-frequency analog/digital, electro-optic, and radio frequency (RF) systems.

Electro-Optic Capability	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.319			
RDT&E Articles Quantity	1			

Develops a downsized electro-optic support system to enable Reconfigurable Transportable CASS (RTCASS) to provide support for Marine Air FLIR and LASER Targeting systems.

CASS Modernization Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	6.788	8.722		
RDT&E Articles Quantity	1	1		

Develops and integrates the technologies that will comprise the Modernization Program for CASS stations, which will be modernized and updated to current testing technologies while maintaining full compatibility with the legacy test program sets. Technologies include: downsized and scalable packaging techniques, multi-lingal runtime capability, interoperability framework and architectures, diagnostics data handling, virtual/synthetic/next-generation instrument concepts and the Agile Rapid Global Combat Support (ARGCS) Advanced Concept Technologies (ACTD).

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	0852, CONSOLIDATED AUTOM SPT SYS

B. Accomplishments/Planned Program (Cont.)

eCASS Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost			26.991	
RDT&E Articles Quantity			1	

Develop, integrate and test an Automatic Test System (ATS) to replace legacy CASS systems. The new ATS will be compatible with and capable of hosting the hundreds of existing Test Programs that are currently utilized on legacy CASS at the Intermediate and Depot levels of maintenance, as well as any emerging Test Programs that may require greater test capability than provided by legacy CASS.

Test Technology Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost			0.713	
RDT&E Articles Quantity			1	

Develops, integrates, and evolves enhanced test capabilities and technologies for insertion into the CASS family of test systems. As weapon system electronics evolve, new test capabilities are required to support advanced systems. Existing test capabilities must be extended in range, accuracy, time and frequency domains in order to sustain the required test accuracy ratios for weapon systems support (the automatic test system must be four times as accurate as the asset being tested).

	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVMENTS	0852, CONSOLIDATED AUTOM SPT SYS

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2008	FY 2009	FY 2010
APN 070500 CASS	94.856	81.548	59.675

Related RDT&E: Not Applicable

D. ACQUISITION STRATEGY:

Formal test technology reviews with industry are conducted annually (cooperative Joint Services initiative) to define maturity of needed technologies. Further studies are conducted as needed. Procurement strategy is determined by market survey and cooperative opportunities.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **May 2009**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 0852, CONSOLIDATED AUTOM SPT SYS							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Primary Hdw Dev CASS EO	C-CPFF	VARIOUS	5.867								5.867	
Primary Hdw Dev CASS Mod	C-CPFF	VARIOUS	13.544	7.315	04/09						20.859	
Primary Hdw Dev CASS Upgrades	C-CPFF	VARIOUS	1.735	0.200	04/09						1.935	
Primary Hdw Dev eCASS	C-CPFF	TBD				23.673	01/10				23.673	
Primary Hdw Dev Test Technology	C-CPFF	VARIOUS				0.413	03/10				0.413	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			21.146	7.515		24.086					52.747	
Remarks:												
Primary Hdw Dev CASS Mod	WX	VARIOUS	11.308	1.100	01/09						12.408	
Primary Hdw Dev CASS eCASS	WX	VARIOUS				3.100	01/10				3.100	
Primary Hdw Dev Test Technology	WX	VARIOUS				0.200	01/10				0.200	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Support			11.308	1.100		3.300					15.708	
Remarks												

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **May 2009**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 0852, CONSOLIDATED AUTOM SPT SYS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date			Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation											0.000	
Operational Test & Evaluation											0.000	
Live Fire Test & Evaluation											0.000	
Test Assets											0.000	
Tooling											0.000	
GFE											0.000	
Award Fees											0.000	
Subtotal T&E			0.000	0.000		0.000					0.000	
Remarks:												
Primary Hdw Dev CASS Mod Travel		VARIOUS	1.362	0.307	VARIOUS						1.669	
Primary Hdw Dev eCASS Travel						0.218	VARIOUS				0.218	
Primary Hdw Dev Test Tech Travel						0.100	VARIOUS				0.100	
											0.000	
											0.000	
											0.000	
Subtotal Management			1.362	0.307		0.318					1.987	
Remarks:												
Total Cost			33.816	8.922		27.704				0.000	70.442	
Remarks:												

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	0852, CONSOLIDATED AUTOM SPT SYS	

Fiscal Year	2008				2009				2010			
	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones CASS Modernization Dev												
Contract Award						Contract Award △						
System Development							System Development ▭					
Testing												
Acquisition Milestones eCASS Development												
Contract Award								Contract Award △				
System Development									▭			
Testing												
Deliveries												

R-1 SHOPPING LIST- Item No.178

CLASSIFICATION:

Exhibit R-4a, Schedule Detail				DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 0852, CONSOLIDATED AUTOM SPT SYS
Schedule Profile	FY 2008	FY 2009	FY 2010	
Schedule Profile - CASS Modernization Development				
Contract Award		3Q		
System Development		3Q-4Q	1Q-2Q	
Schedule Profile - eCASS Development				
Contract Award			1Q	
System Development			1Q-4Q	
DT-B1 & B2 Testing				
DT-C1 Testing				

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile													DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY									PROGRAM ELEMENT NUMBER AND NAME				PROJECT NUMBER AND NAME
RDT&E, N / BA-7									0205633N, AVIATION IMPROVEMENTS				0852, CONSOLIDATED AUTOM SPT SYS
Fiscal Year	2008				2009				2010				
	1	2	3	4	1	2	3	4	1	2	3	4	
Acquisition Milestones ARGCS													
Contract Award													
System Development													
Testing	[redacted]				TESTING								

R-1 SHOPPING LIST - Item No.178

CLASSIFICATION:

Exhibit R-4a, Schedule Detail			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS		PROJECT NUMBER AND NAME 0852, CONSOLIDATED AUTOM SPT SYS
Schedule Profile	FY 2008	FY 2009	FY 2010
Schedule Profile - ARGCS			
Testing	1Q-4Q		

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 1041, ACFT EQ REPL/MAINT PROG			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
1041 ACFT EQ REPL/MAINT PROG	**2.421**	**3.690**	**4.105**					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Aircraft Equipment Replacement/ Maintenance Improvement Program (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 equipment installed in Naval aircraft. It also provides a transition vehicle to deploy Total Ownership Cost (TOC) reduction initiatives through flight-test support and Fleet Test & Evaluation. It meets affordable readiness objectives by providing a cost-effective solution to obsolescence problems encountered when service lives are extended. AERMIP 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.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENT	1041, ACFT EQ REPL/MAINT PROG

B. Accomplishments/Planned Program

AVIONICS AND WIRING	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.140	1.025	1.092	
RDT&E Articles Quantity				

AVIONICS AND WIRING (A)

Demonstrate prototype generator system diagnostics and health management system in relevant environment. Demonstrate generator system diagnostics and health management system in aircraft on the ground. Demonstrate diagnostic and prognostic technologies for aircraft batteries in relevant environment Demonstrate these technologies in aircraft on the ground. Qualify high-power smart switching technology to MIL-STD-704 and subject unit to full laboratory and aircraft qualification testing and flight test profiles. Test and evaluate self-wrapping sleeving that provides mechanical and EMI protection. Evaluate cold shrink end caps and tubing. Develop test methods and performance levels for evaluating abrasion resistance properties of composite wire constructions over operating temperature levels. Opportunities and issues arise yearly that demand immediate attention to provide significant benefit or to avert an unanticipated problem. AERMIP actively pursues these issues and opportunities and responds quickly to implement a solution. Products are a qualified material or piece of equipment and the procedures/process required for its implementation. Pursue next generation wiring diagnosis and prognostics methods and prove the applicability to Naval aviation. Address avionics related reliability issues impacting multiple aircraft platforms.

AIR VEHICLE	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.281	1.742	1.775	
RDT&E Articles Quantity				

AIR VEHICLE (B)

Improve sand erosion resistance of coated impeller for auxiliary power unit systems. Evaluate promising coating candidates to validate erosion resistance performance versus TiN coating. Design and integrate sand erosion test rig to simulate impeller operation on the aircraft in a sand/dust environment. Redesign and test electric bomb fuse system from aircraft through bomb rack to bomb fusing system. Validate measurement of flaws on bent titanium tubing for hydraulic systems. Validate measurement kit. Test hydraulic fluid replacement with selected hydraulic components. Investigate relationship between degraded heat exchanger performance and air cycle machine failure. Determine methods to identify degraded heat exchangers in the environmental control system such that they can be replaced before air cycle machine failure. Evaluate digital inflation tire reader to measure aircraft tire pressure. Opportunities and issues arise yearly that demand immediate attention to provide significant benefit or to avert an unanticipated problem. AERMIP actively pursues these issues and opportunities and responds quickly to implement a solution. Products are a qualified material or piece of equipment and the procedures/process required for its implementation. Develop new methods of structural repair. Pursue subsystem improvements by increasing component reliability. Qualification and implementation of advanced non-chrome primers with adequate corrosion protection properties.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENT	1041, ACFT EQ REPL/MAINT PROG

B. Accomplishments/Planned Program

SE REVITALIZATION	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		0.923	0.951	
RDT&E Articles Quantity				

SE REVITALIZATION (C)

Incorporate systems engineering process approach to achieve satisfactory levels of reliability and maintainability (R&M), successfully demonstrate R&M levels during test and evaluation, and sustain R&M levels throughout the system's life-cycle. Improve technical execution of acquisition programs through reemphasis on systematic technical planning. Create web-based tool to enable process and policy improvement.

NAE CORROSION IMPROVEMENT	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost			0.287	
RDT&E Articles Quantity				

NAE CORROSION IMPROVEMENT (D)

Validate and implement aircraft flight line canopy shelters. Field test and implement tape and adhesive remover, which is designed to more effectively remove radome and leading edge boots and tapes and for which current maintenance practices cause component damage and take excessive time. Design, test, and implement Controlled Solidification Investment Cast aluminum gearboxes as alternatives to magnesium alloy gearboxes. Demonstrate and validate conducting paint and sealants with less noble galvanic potential and which provide acceptable electrical performance with much lower propensity to cause corrosion of airframe and components.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENT	1041, ACFT EQ REPL/MAINT PROG

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2008	FY 2009	FY 2010

Not Applicable.

D. ACQUISITION STRATEGY:

Not Applicable.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 1041, ACFT EQ REPL/MAINT PROG						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Sys Eng - Avionics/Wiring	WX	NAWCAD, Pax River, MD	2.080	0.927	VARIOUS	0.948	11/09					
Sys Eng - Avionics/Wiring	SSFFP	G E, Niskayuna, NY	1.004									
Sys Eng - Avionics/Wiring	SSFFP	Raytheon, Indianapolis, IN	0.300									
Sys Eng - Avionics/Wiring	CFFP	TBD				0.040	03/10					
Sys Eng - Air Vehicle	WX	NAWCAD, Pax River, MD	3.031	1.243	VARIOUS	1.067	11/09					
Sys Eng - Air Vehicle	WX	FRC, San Diego, CA	0.383	0.075	11/08							
Sys Eng - Air Vehicle	WX	FRC, Cherry Point, NC	0.318									
Sys Eng - Air Vehicle	WX	FRC, Jacksonville, FL	0.322									
Sys Eng - Air Vehicle	CFFP	TBD		0.275	VARIOUS	0.560	04/10					
Sys Eng - Air Vehicle	CFFP	EMA, Lexington Park, MD	0.200									
Sys Eng - SE Revitalization	WX	NAWCAD, Pax River, MD		0.732	12/08	0.768	12/09					
Sys Eng - SE Revitalization	CFFP	TBD		0.184	04/09	0.185	04/10					
Sys Eng - NAE Corrosion	WX	NAWCAD, Pax River, MD				0.262	12/09					
Sys Eng - NAE Corrosion	WX	FRC, San Diego, CA										
Sys Eng - NAE Corrosion	WX	FRC, Cherry Point, NC										
Sys Eng - NAE Corrosion	WX	FRC, Jacksonville, FL										
Subtotal Product Development			7.638	3.436		3.830						
Remarks:												
Studies & Analyses	WX	NADEP, SAN DIEGO CA	0.193									
Studies & Analyses	WX	NAWCAD, Pax River, MD	12.171									
Studies & Analyses - NAE Corrosion	WX	NAWCAD, Pax River, MD				0.025	12/09					
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			12.364	0.000		0.025						

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: **May 2009**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 1041, ACFT EQ REPL/MAINT PROG						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000						
Remarks:												
Contractor Engineering Support	SSFFP	Various	1.859									
Government Engineering Support												
Program Management Support	WX	NAWCAD, Pax River, MD	0.461	0.244	11/08	0.245	11/09					
Travel	WX	NAWCAD, Pax River, MD	0.050	0.010	11/08	0.005	11/09					
Transportation												
SBIR Assessment												
Subtotal Management			2.370	0.254		0.250						
Remarks:												
Total Cost			22.372	3.690		4.105						
Remarks:												

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENT	PROJECT NUMBER AND NAME 1041, ACFT EQ REPL/MAINT PROG	

Fiscal Year	FY 2008				FY 2009				FY 2010			
	1	2	3	4	1	2	3	4	1	2	3	4
Avionics and Wiring:												
Smart Wire												
Arc Fault Circuit Breaker												
ASW-25 Logic Stack												
High-Speed Bus Switching												
A/C Battery Diagnostic & Prognostic System												
Generator System Diagnostics & Health												
Investigate High Value Return on Investment												
Wiring Diagnositcs and Prognostics												
Avionics Reliability Enhancement												
Air Vehicle:												
Advanced Non-Chrome Primers												
Imbedded Fire Bottle Condition Sensor												
Improved Corrosion Preventative Compounds												
Corrosion Prevention Control												
Advanced Methods of Structural Repair												
Subsystem Improvement Initiatives												
Sand & Erosion Resistance of APU Impeller												
Electric Bomb Fuze System												
Titanium Tubing for Hydraulic Systems												
Integrated In-Service Reliability Prog												
Investigate High Value Return on Investment												
SE Revitalization:												
Improved Tech Execution of Acq. Programs												
NAE Corrosion Improvement:												
Flight Line Canopy Shelters												
Tape and Adhesive Remover												
Aluminum Gearboxes												
Conducting Paint & Sealants												
Investigate High Value Return on Investment												
Deliveries												

CLASSIFICATION:

Exhibit R-4a, Schedule Detail			DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7	PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 1041, ACFT EQ REPL/MAINT PROG			
Schedule Profile	FY 2008	FY 2009	FY 2010					
Avionics & Wiring								
Smart Wire	1Q-4Q	1Q-4Q						
Arc Fault Circuit Breaker	1Q-4Q	1Q-4Q						
ASW-25 Logic Stack	1Q-4Q							
High-Speed Bus Switching			1Q-4Q					
Aircraft Battery Diagnostic & Prognostic System			1Q-4Q					
Generator System Diagnostics & Health			1Q-4Q					
Investigate High Value Return on Investment	1Q-4Q	1Q-4Q	1Q-4Q					
Avionics Reliability Enhancements			1Q-4Q					
Wiring and Diagnostics			1Q-4Q					
Air Vehicle								
Advanced Non-Chrome Primers	1Q-4Q							
Imbedded Fire Bottle Condition Sensor	1Q-2Q							
Improved Corrosion Preventative Compounds	1Q-4Q	1Q-4Q	1Q-4Q					
Corrosion Prevention and Contro		1Q-4Q	1Q-4Q					
Advanced Methods of Structural Repair		1Q-4Q	1Q-4Q					
Subsystem Improvement Initiatives		1Q-4Q	1Q-4Q					
Sand & Erosion Resistance of APU Impeller			1Q-4Q					
Electric Bomb Fuze System			1Q-4Q					
Titanium Tubing for Hydrauilic Systems			1Q-4Q					
Integrated In-Service Reliability Program	1Q-4Q							
Investigate High Value Return on Investment	1Q-4Q	1Q-4Q	1Q-4Q					
SE Revitalization								
Improved Technical Execution of Acq. Programs		1Q-4Q	1Q-4Q					
NAE Corrosion Improvement								
Flight Line Canopy Shelters			1Q-4Q					
Tape and Adhesive Remover			1Q-4Q					
Aluminum Gearboxes			1Q-4Q					
Conducting Paint & Sealants			1Q-4Q					
Investigate High Value Return on Investment			1Q-4Q					

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 1355, A/C ENG COMP IMP (CIP)			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
1355 A/C ENG COMP IMP (CIP)	**56.277**	**59.421**	**78.340**					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Aircraft Engine Component Improvement Program (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.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)

B. Accomplishments/Planned Program

P3, E2, C2, C130 (T56)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	6.820	6.055	5.880	
RDT&E Articles Quantity				

P3, E2, C2, C130,(T56)
Implement the Engine Monitory System version 7.0 upgrade. Maintain safety margins by investigating turbine coatings and develop new designs, propeller integration efforts with potential propeller designs, perform engine hot section corrosion and fatigue analysis, and bearing improvements. Analysis of redesign for first stage turbine blades on T56-A427 engines. Qualification and verification testing of redesigned first stage turbine blades. Resolve service revealed problem. Work on resolving fuel nozzle choking issue. Resolve design problems in the areas of safety coupling, compressor leakage, generator problems, and electrical wiring problems. Mission updates and life analysis of critical components.

E2/C2/C130/P3 (Props)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.863	1.646	1.500	
RDT&E Articles Quantity				

E2/C2/C130/P3 (Props)
Incorporate improved blade heaters. Develop improved propeller control system.

Mature Aircraft (J52)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	4.111	3.500	3.400	
RDT&E Articles Quantity				

Mature Aircraft (J52)
Address the top readiness degraders and AVDLR costs; implement efforts on the J52 engine (EA-6B) ASMET test, perform annual maintenance awareness brief and annual P-408A major engine inspection program. Study and implement solutions to aging aircraft issues and future obsolescence problems. Redesign of diffuser case for increased life. Design and analysis efforts on 4.5 bearing problem on J52 engine (EA-6B). Efforts on life analysis and mission verification for critical components. Evaluate new coatings and seals for turbine areas. Begin ASMET of Pratt Whitney Associates.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)	

B. Accomplishments/Planned Program (Cont.)

Mature Aircraft (J85)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.998	0.910	0.890	
RDT&E Articles Quantity				

Mature Aircraft (J85)
Address the top readiness degraders and AVDLR costs; implement efforts on the J85 engine (F-5) ASMET test, perform annual maintenance awareness brief and annual P-408A major engine inspection program. Study and implement solutions to aging aircraft issues and future obsolescence problems.

H1/H60 (T700)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	3.891	3.363	3.900	
RDT&E Articles Quantity				

H1/H60 (T700)
Advanced Helicopter Transmission Lubricant Program, extended transmission component lives, increased readiness by reducing corrosion, Mission Profile Data Collection and Dynamic Component Life Limit efforts. Time on wing and Mean Time Between Removals (MTBR) cost drivers initiatives including compressor durability, Titanium Nitrates (TiN) coating and three-stage turbine. Efforts in the area of engine power loss, secondary power and wiring issues.

UH1N (T400)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.674	0.500	0.380	
RDT&E Articles Quantity				

UH1N (T400)
Address top safety concerns as ranked by the OAG and System Safety Working Group, continue to update Navy maintenance manuals, continue to improve time-between-overhaul and reduced impact of high-time parts; T400 Improved Compressor Turbine Stub Shaft, T400 Improved Gas Generator Case Diffuser Inlet, T400 Improved Compressor Coating, T400 Life Management, Study T400 Parts Obsolescence.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)

B. Accomplishments/Planned Program

AV-8B (F402)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	3.073	5.853	5.500	
RDT&E Articles Quantity				

AV-8B (F402)
Address top readiness degraders and AVDLR costs; safety of flight issues, engine removal and mission failure drivers, assess life management program issues for engine components. Project included but not limited to: ASMET testing, support of a Fleet Leader Program, Analytical Condition Inspection (ACI), Engine Life Management Program (ELMP) execution and design fixes for any service revealed deficiencies. LPC 1 vane cracking problems and FMU mod problems. Analysis of ASMET engine test.

H-53/H-46/H-3 (T58/T64)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	8.549	8.262	8.500	
RDT&E Articles Quantity				

H-53/H-46/H-3 (T58/T64)
Bleed valve redesign. Working engine design efforts on top cause for engine removals; improve on wing times; addressed top safety concerns as ranked by the Operational Advisory Group (OAG); reliability-centered maintenance program; improve compressor blade retention design; and develop corrosion resistant bearing designs. Improve the mean time between engine removal based upon continued implementation of reliability center maintenance initiatives. Conduct life management analysis to resolve critical rotating component issues based upon engine structural integrity assessments and the master life management plan.

F-18 C/D/E/F (F414/F404)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	14.852	14.533	16.310	
RDT&E Articles Quantity				

F-18 C/D/E/F (F414/F404)
Address top safety issues, readiness degraders, and AVDLR costs; safety of flight issues; engine removal and mission failure drivers; assess life management program issues for engine components. Analysis and redesign of fuel nozzles and control system to resolve sub idle flameout issues. Analysis of combustion linear to determine cause for durability problems. Analysis and redesign of components with service revealed deficiencies.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)	

B. Accomplishments/Planned Program

T-45 (F405)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.785	1.838	2.500	
RDT&E Articles Quantity				

T-45 (F405)
Address top safety issues reported from fleet. Analysis and redesign components with service revealed deficiencies.

V-22 (T406)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.760	1.500	5.200	
RDT&E Articles Quantity				

V-22 (T406)
Review safety ECPs and support incorpation safety requirements.

F-16 (F100)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	
RDT&E Articles Quantity				

F-16 (F100)
RDT&E effort covered under USAF Performance Based Logisitics Contract.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)

B. Accomplishments/Planned Program

Multi-Platform Product Support Teams	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	8.901	11.461	11.889	
RDT&E Articles Quantity				

Multi-Platform Product Support Teams
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; improve products and processes for fuels, lubricants, and refueling equipment; improve blade and vane repair processes and life cycle support; and improve electrical system product support, wiring, and battery systems. Includes funding for GFE fuel provided in support of engine developmental and qualification testing.

F-35 (F135)	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.000	0.000	12.491	
RDT&E Articles Quantity				

Address safety issues, readiness degraders, and AVDLR costs; safety of flight issues; engine removal and mission failure drivers; assess life management program issues for engine components.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2008	FY 2009	FY 2010

Not Applicable

D. ACQUISITION STRATEGY:

Not Applicable

R-1 SHOPPING LIST-Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1) | DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	1355, A/C ENG COMP IMP (CIP)

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
PRODUCT DEVELOPMENT												
Sys Eng F110 Engine Program	SS-CPAF	GE - OHIO	17.992									
Sys Eng F402 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	5.396	1.814	10/1/2008	1.705	10/1/2009					
Sys Eng F402 Engine Program	SS-CPFF	ROLLS ROYCE - UK	43.084	4.039	12/1/2008	3.795	12/1/2009					
Sys Eng T58/T64 Engine Program	SS-CPFF	GE - MASS	61.425	5.122	10/1/2008	5.270	10/1/2009					
Sys Eng T58/T64 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	15.162	3.140	101/2008	3.230	101/2009					
Sys Eng J52 Engine Program	SS-CPFF	P & W - FLORIDA	32.292	1.890	10/1/2008	1.836	10/1/2009					
Sys Eng J52 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	7.166	1.610	10/1/2008	1.564	10/1/2009					
Sys Eng T56 Engine Program	SS-CPFF	ROLLS ROYCE - IN	26.274	4.238	2/1/2009	4.116	2/1/2010					
Sys Eng T56 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	18.366	1.817	10/1/2008	1.764	10/1/2009					
Sys Eng F405 Engine Program	SS-CPFF	ROLLS ROYCE - UK	22.183	1.838	12/1/2008	2.500	12/1/2009					
Sys Eng F414 /F404 Engine Program	SS-CPFF	GE - MASS	58.201	10.900	12/1/2008	12.232	12/1/2009					
Sys Eng F414 /F404 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	3.613	3.633	10/1/2008	4.078	10/1/2009					
Sys Eng T700 Engine Program	SS-CPFF	GE - MASS	17.869	2.354	1/1/2009	2.730	1/1/2010					
Sys Eng T700 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	6.747	1.009	10/1/2008	1.170	10/1/2009					
Sys Eng TF34 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	.338									
Sys Eng TF34 Engine Program	SS-CPFF	G.E. OHIO	7.845									
Sys Eng T406 Engine Program	SS-CPFF	ROLLS ROYCE - IN				3.400	12/1/2009					
Sys Eng T406 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	1.600	1.500	10/1/2008	1.800	10/1/2009					
Sys Eng T400 Engine Program	SS-CPFF	P & W - FLORIDA	3.911	.500	12/1/2008	.380	12/1/2009					
Sys Eng J85 Engine Program	SS-CPFF	GE -OK	4.095	.910	11/1/2008	.890	11/1/2009					
Sys Eng F100 Engine Program	VARIOUS	NAWCAD, PAX RIVER MD	.200									
Sys Eng Props Program	SS-CPFF	HAM SUNSTRAND - CON	9.194	1.646	12/1/2008	1.500	12/1/2009					
Sys Eng Contracts under 1.0M	VARIOUS	VARIOUS	16.114									
Sys Eng Lab Fld Activity-1.0 or more	WX	NAWCAD, PAX RIVER MD	160.258	9.424	10/1/2008	9.545	10/1/2009					
Sys Eng Other In-House Spt	VARIOUS	VARIOUS	18.615	.313	10/1/2008	.315	10/1/2009					
GFE*	MILSTRIP	DES/DLA	7.146	1.200	10/1/2008	1.500	10/1/2009					
Sys Eng F135 Engine Program	SS-CPFF	P&W - CONN				12.491	10/1/2009					
Award Fees	SS-CPFF		1.305									
Subtotal Product Development			566.391	58.897		77.811						

GFE includes expected cost of fuel necessary to support engine developmental and qualification testing.
Remarks: Total may be off due to rounding.

R-1SHOPPING LIST-Item No.178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: **May 2009**						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 1355, A/C ENG COMP IMP (CIP)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Development Support	VARIOUS	VARIOUS	6.702	0.307	VARIOUS	0.307	VARIOUS					
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			6.702	0.307		0.307						

Remarks:

R-1SHOPPING LIST-Item No.178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)						DATE: May 2009						
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**			PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS			PROJECT NUMBER AND NAME 1355, A/C ENG COMP IMP (CIP)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Developmental Test & Evaluation	VARIOUS	VARIOUS	3.120	0.053	VARIOUS	0.053	VARIOUS					
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			3.120	0.053		0.053						
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	VARIOUS	VARIOUS	1.447	0.109	VARIOUS	0.112	VARIOUS					
Travel	VARIOUS	NAVAIR, PAX RIVER, MD	0.433	0.055	VARIOUS	0.057	VARIOUS					
Transportation												
SBIR Assessment												
Subtotal Management			1.880	0.164		0.169						
Remarks:												
Total Cost			578.093	59.421		78.340						
Remarks:												

R-1SHOPPING LIST-Item No.178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, Aviation Improvements				PROJECT NUMBER AND NAME 3189, DIGITAL I-TER			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
3189, DIGITAL I-TER	**5.078**							
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops an increased capability to the existing BRU-42 Improved Triple Ejector Rack (I-TER) for the AV-8B, which adds a multiple carriage capability for Smart Weapons such as Joint Direct Attack Munition (JDAM). Using existing I-TERs as Government Furnished Material, the electronics tray will be replaced with a more capable electronics package allowing for smart weapons capability. The FY08 funding supports full development of Digital I-TER.

FY09 and FY10 funds realigned to PE 0604214N, Project Unit 2634. These funds were realigned to meet the appropriate intent and strategy of upgrading the AV-8B software to ensure the aircraft receives an increased capability while utilizing an upgraded BRU-42 Improved Triple Ejector Rack (I-TER).

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 3190, MULTI-PURPOSE BOMB RACKS			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
3190, MULTI-PURPOSE BOMB RACKS	**3.323**	**11.845**	**22.422**					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

3190- Multi-Purpose Bomb Racks (MPBR): The MPBR will replace the BRU-41 / 42 / 33 / 55 and provide for the use of both tactical and training stores on one common rack. The MPBR will be integrated on the F/A-18E / F as part of this project.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	3190, MULTI-PURPOSE BOMB RACKS

B. Accomplishments/Planned Program

MULTI-PURPOSE BOMB RACK DEVELOPMENT	FY 08	FY 09	FY 10
Accomplishments/Effort/Subtotal Cost	3.323	10.213	15.440
RDT&E Articles Quantity			

Contracts documentation (Statement of Objectives and supplemental guidance, rack specification, engineering verification matrix) is being finalized to support the release of a competitive RFP. Once source selection is complete, the selected vendor will design the MPBR to include all electrical and mechanical interfaces. Rack prototypes will be fabricated and intergration testing will be performed. The vendor will also design and/or modify existing Support Equipment for test the new rack design.

MULTI-PURPOSE BOMB RACK SOFTWARE DEV.	FY 08	FY 09	FY 10
Accomplishments/Effort/Subtotal Cost	0.000	1.632	4.102
RDT&E Articles Quantity			

Begin software development and aircraft integration.

MULTI-PURPOSE BOMB RACK TESTING	FY 08	FY 09	FY 10
Accomplishments/Effort/Subtotal Cost	0.000	0.000	2.880
RDT&E Articles Quantity			

Provide systems engineering support and begin Developmental Test and Evaluation.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	3190, MULTI-PURPOSE BOMB RACKS

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2008	FY 2009	FY 2010
Not Applicable			

D. ACQUISITION STRATEGY:

The design and development of the MPBR will be a Cost Plus Incentive Fee (CPIF) competitive contract. The aircraft software integration will be done by the F/A-18 Advanced Weapons Laboratory at NAWC WD China Lake and through a Cost Type contract with Boeing, the F/A-18E/F Prime Aircraft Contractor.

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**		PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 3190, MULTI-PURPOSE BOMB RACKS	
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date
PRODUCT DEVELOPMENT							
Primary Hardware Development	CPIF	TBD		5.700	09/09	11.207	12/09
Subtotal Product Development				5.700		11.207	

Remarks:

Software Development							
China Lake AWL (Software Build H8)	WX	NAWCWD, CHINA LAKE CA		1.632	05/09	4.102	12/09
Subtotal Support				1.632		4.102	

Remarks:

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NUMBER AND NAME
RDT&E, N / BA-7	0205633N, AVIATION IMPROVEMENTS	3190, MULTI-PURPOSE BOMB RACKS

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date
TEST AND EVALUATION							
Developmental Test & Evaluation	WX	NAWCAD, PATUXENT RIVER MD				0.204	12/09
Operational Test	WX	COMOPTEVFOR				2.676	12/09
Subtotal T&E				0.000		2.880	

Remarks:

Government System Engeering and Support							
Contractor Engineering Support	VARIOUS	VARIOUS		0.376	02/09	0.500	12/09
Government Engineering Support	WX	NAWCAD, PATUXENT RIVER MD	1.526	1.298	12/08	0.893	12/09
Government Engineering Support	WX	NSWC, CRANE IN	0.997	2.000	12/08	2.000	12/09
Program Management Support	WX	NAWCAD, PATUXENT RIVER MD	0.800	0.639	12/08	0.640	12/09
Travel	TO	NAVAIR, PATUXENT RIVER MD		0.200	10/08	0.200	10/09
Subtotal Management			3.323	4.513		4.233	

Remarks:

Total Cost			3.323	11.845		22.422	

Remarks:

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION:

EXHIBIT R4, Schedule Profile													DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**									PROGRAM ELEMENT NUMBER AND NAME 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 3190, MULTI-PURPOSE BOMB RACKS
Fiscal Year	2008				2009				2010				
	1	2	3	4	1	2	3	4	1	2	3	4	
Acquisition Milestones						AS	RFP	MS B					
Development											SFR PDR		
								Developmental Phase					
Delivery of Test Units													
Test & Evaluation Milestones Development Test Operational Test													
Production Milestones													
Production Deliveries													

R-1 SHOPPING LIST - Item No. 178

CLASSIFICATION

Exhibit R-4a, Schedule Detail							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT 0205633N, AVIATION IMPROVEMENTS				PROJECT NUMBER AND NAME 3190, MULTI-PURPOSE BOMB RACKS			
Schedule Profile	FY 2008	FY 2009	FY 2010					
Acquisition Strategy (AS)		2Q						
Request For Proposal (RFP)		3Q						
Milestone B		4Q						
Development Phase		4Q	1Q - 4Q					
System Functional Review			3Q					
Preliminary Design Review (PDR)			3Q					

R-1 SHOPPING LIST - Item No. 178

EXHIBIT R-2a, RDT&E Project Justification							DATE: **May 2009**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-7**	PROGRAM ELEMENT NUMBER AND NAME **0205633N, AVIATION IMPROVEMENTS**				PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS			
COST ($ in Millions)	FY 2008	FY 2009	FY 2010					
9999, CONGRESSIONAL ADDS	**18.754**	**12.326**						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

CONGRESSIONAL ADDS

CLASSIFICATION:			
EXHIBIT R-2a, RDT&E Project Justification			DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA 7**	PROGRAM ELEMENT NUMBER AND NAME **0205633N, AVIATION IMPROVEMENTS**	PROJECT NUMBER AND NAME **9999, CONGRESSIONAL ADDS**	

B. Accomplishments/Planned Program

9752A Real-time Weight and Balance System for C-130s	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	3.100			
RDT&E Articles Quantity				

Real-time Weight and Balance System: This effort is to develop and qualify a real-time measurement weight and balance system for the C-130 to improve safety and speed of dispatch and to reduce costs associated with man-hours and delays.

9A76A Advance Avionics Miniaturization Program	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.969			
RDT&E Articles Quantity				

Advance Avionics Miniaturization Program: This is a continuation of 9856: This effort is to study and evaluate advanced cooling technologies for integration into existing avionics systems. To develop and demonstrate the capability to take existing avionics capability and re-engineer them into smaller “miniaturized” packages. Capability being addressed is a Detect, See, and Avoid capability for unmanned aerial vehicle autonomous operations.

9A77A Age Exploration Model Extension	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.936			
RDT&E Articles Quantity				

Age Exploration Model extension program is a continuation of congressional add 9109N: this effort is to develop an Age Exploration Model for Naval aircraft platforms. The model will use existing Naval aircraft data to establish connections between age and reliability, maintainability, and readiness and will provide the Navy with a valuable tool for understanding, predicting, and communicating impacts of decisions and for mitigating risks associated with these decisions. A long-term add that has included many items such as the development and evolution of Knowledge Management System and maintenance data analysis and trending tools for reliability tracking. Efforts in FY07 and FY08 have focused on developing sensor fusion capabilities to allow better utilization of existing Health Usage Monitoring System (HUMS) data.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification | DATE: **May 2009**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA7	**0205633N, AVIATION IMPROVEMENTS**	**9999, CONGRESSIONAL ADDS**

B. Accomplishments/Planned Program (Cont.)

9A79A Arc Fault Circuit Breaker	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.776	0.997		
RDT&E Articles Quantity				

Arc Fault Circuit Breaker with Arc Location System: This effort is to demonstrate a wireless fault sensor to detect location of wire faults that result in the tripping of the arc fault circuit breaker. To develop and demonstrate the capability to locate the position on the wire of an arcing incident that is sufficient to trip the Arc Fault Circuit Breaker. Miniaturize the capability to be small enough to fit within the existing Arc Fault Circuit Breaker package without impacting the performance of the existing Arc Fault Breaker.

9A80A F/A 18 Avionics Ground Support System	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.552	2.393		
RDT&E Articles Quantity				

This congressional add supports the F/A 18 Avionics Ground Support System.

9A84A Rotor Blade Protection	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.775	0.798		
RDT&E Articles Quantity				

Rotor Blade Protection: The add supports the Joint Aeronautical Logistics Commanders (JALC) initiatives to develop an industry standard for sand and water erosion testing and the ability to model coating designs for desirable erosion properties. This program will provide the first standard for sand and water erosion testing, tools for numerical investigation of protective coatings and adhesives, and transition of repair and overhaul technology to the depots. To develop a model of sand damage to helicopter rotor blades that can be used to improve protection schemes of blades in rework or future developments.

9A85A Sacrificial Film Laminate	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		0.957		
RDT&E Articles Quantity				

Sacrificial Film Laminate: The add supports development of single- and multi-layered sacrificial film laminates for Navy and Marine Corps helicopter windscreens. The effort focuses on the characterization of current windsreens with respect to light transmission and electrostatic properties. An installation technique will be developed that reduces film failure due to installation errors.

CLASSIFICATION:		
EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA7	**0205633N, AVIATION IMPROVEMENTS**	**9999, CONGRESSIONAL ADDS**

B. Accomplishments/Planned Program (Cont.)

9A86A Wireless Sensors for Navy Aircraft	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.544	2.394		
RDT&E Articles Quantity				

The purpose of the add is to perform full scale development and test of a prototype wireless strain sensor primarily for rotorcraft applications. This full scale testing supports a Joint Aeronautical Logistics Commanders (JALC) initiative to benchmark best Condition Based Maintenance (CBM) practices and transition a suite of sensors to airborne applications. Demonstrate the usage of an energy scavenging wireless sensor for structural monitoring within a Navy environment. Effort requires that the wireless data transmission can meet all Information Assurance requirements and still be used for the intended application. A smaller effort with the contractor is part of this project where these sensors are to be demonstrated as radio frequency identification tags usage during F/A-18 manufacturing. Long term plan would be for the contractor to apply sensor during manufacturing and leave in place for Navy usage as structural monitors.

9C64A Aviation Improvements-Low Observable A	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.549			
RDT&E Articles Quantity				

Aviation Improvements - Low Observable Aircraft Sealants: Effort to develop aircraft sealants of sufficient strength that are electrically conductive yet resist radar detection. Further develop, optimize, and scale up processing of an electrically conductive sealant that is lighter weight and has improved mechanical properties over existing conductive sealants, but which retains required electrical and mechanical performance capabilities and has the necessary properties including extended shelf life (carrier operation), viscosity (for application) and corrosion protection (saltwater) to make it usable in Naval Aviation environments.

9C65A Lightweight Composite Structure Developr	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.161	0.798		
RDT&E Articles Quantity				

Lightweight Composite Structures Development for Aerospace Vehicles: The qualification and deployment of complex composite materials for manned and unmanned ground and air vehicles leading to affordable, lightweight composite structures.

CLASSIFICATION:		
EXHIBIT R-2a, RDT&E Project Justification		DATE: **May 2009**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA7	**0205633N, AVIATION IMPROVEMENTS**	**9999, CONGRESSIONAL ADDS**

B. Accomplishments/Planned Program (Cont.)

9C66A Rapid Repair UV Curable Structural Adhesi	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	3.850	2.393		
RDT&E Articles Quantity				

Rapid Repair Ultraviolet (UV) Curable structural adhesives: Effort to develop structural adhesives that cure in the presence of UV light reducing required maintenance equipment while retaining required adhesive strength.

9C67A Structural Life Tracking	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.542			
RDT&E Articles Quantity				

Structural Life Tracking of Navy and Marine Corps Helicopter Aircraft: Developing and validating a high fidelity customized data collection and analysis protocol for helicopter components that is fully automated. Demonstrate the capability for parts fatigue tracking for military rotary-wing aircraft through structural life tracking of Navy and Marine Corps helicopters.

9E18 Vet Biz Initiative	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		1.596		
RDT&E Articles Quantity				

Vet Biz Initiative: Effort intended to develop service-disabled veteran-owned small businesses so that they can address parts obsolescence and anticipated inventory shortage problems by providing the funding for the non-recurring engineering and qualification required for them to be acceptable manufacturing sources.