Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*				R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	95.112	134.612	133.611	0.000	133.611	135.621	112.325	115.038	114.051	Continuing	Continuing
0601: *Acft Handling & Service Equip*	3.115	3.255	1.849	0.000	1.849	1.983	2.993	3.068	3.136	Continuing	Continuing
0852: *Consolidated Auto Support System*	8.653	27.581	31.926	0.000	31.926	23.630	7.033	7.190	7.337	Continuing	Continuing
1041: *Acft Equip Repl/Maint Prog*	3.630	4.088	4.230	0.000	4.230	3.500	3.567	3.653	3.737	Continuing	Continuing
1355: *Acft Engines Comp Imp Prog*	57.878	65.568	75.583	0.000	75.583	80.654	81.781	83.123	84.300	Continuing	Continuing
3190: *Multi-Purpose Bomb Racks*	9.510	22.329	20.023	0.000	20.023	25.854	16.951	18.004	15.541	Continuing	Continuing
9999: *Congressional Adds*	12.326	11.791	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	73.430

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 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	99.416	135.840	0.000	0.000	0.000
Current President's Budget	95.112	134.612	133.611	0.000	133.611
Total Adjustments	-4.304	-1.228	133.611	0.000	133.611
• Congressional General Reductions		-0.561			
• Congressional Directed Reductions		-12.491			
• Congressional Rescissions	0.000	-0.016			
• Congressional Adds		11.840			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-1.975	0.000			
• SBIR/STTR Transfer	-2.328	0.000			
• Program Adjustments	0.000	0.000	133.611	0.000	133.611
• Rate/Misc Adjustments	-0.001	0.000	0.000	0.000	0.000

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *Highly Conductive Lightweight Aircraft Sealant*	0.000	0.956
Congressional Add: *Laser Peening for P-3 Life Extension*	0.000	1.275
Congressional Add: *ARC FAULT CIRCUIT BREAKER WITH ARC LOCATION SYSTEM*	0.997	0.797
Congressional Add: *F/A 18 AVIONICS GROUND SUPPORT SYSTEM*	2.393	0.000
Congressional Add: *ROTOR BLADE PROTECTION*	0.798	0.000
Congressional Add: *Sacrificial Film Laminates For Navy Helicopter Win*	0.957	0.000
Congressional Add: *WIRELESS SENSORS FOR NAVY AIRCRAFT*	2.394	2.390
Congressional Add: *LIGHTWEIGHT COMPOSITE STRUCTURE DEV FOR AEROSPACE*	0.798	2.390
Congressional Add: *RAPID REPAIR UV CURABLE STRUCTURAL ADHESIVES*	2.393	0.000
Congressional Add: *Vet-Biz Initiative for National Sustainment (VINS-*	1.596	3.983

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Congressional Add Subtotals for Project: 9999	12.326	11.791
Congressional Add Totals for all Projects	12.326	11.791

Change Summary Explanation

Schedule:

Project 0601 - Operational test has been removed from all accomplishments/planned programs (Next Generation Munitions Handler (NGMH), Tuboprop Engine Test Instrumention (TETI), Shipboard Firefighting Vehicle (SFV), Aircraft Spotting Dolly (ASD), and Hydraulic Test Stand (HTS)) since it is not required for non-ACAT designated programs. The Government phase of Development Testing will provide the required evaluation. The P-25 Shipboard Firefighting Vehicle (SFV) Team conducted a technology assessment of SFV requirements, new technology and component obsolescence. It was determined that the SFV still meets all shipboard firefighting requirements. However, key components must be replaced due to obsolescence to extend the life of the SFV. Therefore, the decision was made to replace key components (like the engine and water pumps) via the Engineering Change Proposal (ECP) process and to install the new components via a Conversion In Lieu Of Procurement (CILOP) process. Aircraft Spotting Dolly (ASD) has been delayed one year.

Project 0852 - The eCASS schedule slipped due to a delay in finalizing the product specifications. As the acquisition plan was approved, the test strategy was modified.

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 3190 - The MPBR Contract Award for Engineering and Manufacturing Development (EMD) was delayed approximately 6 months. Subsequently, Developmental Test and Evaluation (DT&E) and Integrated Test and Evaluation (IT&E) were also delayed.

Project 9999 - Congressional Adds.

Technical:

Not Applicable

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0601: *Acft Handling & Service Equip*	3.115	3.255	1.849	0.000	1.849	1.983	2.993	3.068	3.136	Continuing	Continuing
Quantity of RDT&E Articles	2	3	2	0	2	0	0	0	0		

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.

New Programs are Hydraulic Test Stand in FY11 and Aircraft Spotting Dolly in FY12. The Hydraulic Test Stand is an R&D program to develop next generation Hydraulic Test Stand for testing Aircraft Hydraulic system components at the intermediate level of maintenance, both ship and shore based. Aircraft Spotting Dolly is an R&D program to develop next generation Aircraft Spotting Dolly. New Aircraft Spotting Dolly requires low profile and alternative power to allow safe spotting of all aircraft aboard CV/L class ships.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Next Generation Munitions Handler (NGMH)	0.838	1.700	0.000	0.000	0.000
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.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: 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. *FY 2010 Plans:* 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.					
Turboprop Engine Test Instrumention (TETI) 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	1.932	0.628	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
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. *FY 2009 Accomplishments:* 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. *FY 2010 Plans:* 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) 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.	0.345	0.927	0.910	0.000	0.910

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: 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. *FY 2010 Plans:* 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. *FY 2011 Base Plans:* 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.					
Hydraulic Test Stand (HTS) The Hydraulic Test Stand Program is to provide a single test stand to replace all of the existing hydraulic test units; HCTS, HCT-10, and Pump & Motor test stand. This will simplify supply support, reduce the stock system footprint, reduce training requirements, introduce new technology, consolidate	0.000	0.000	0.939	0.000	0.939

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
space requirements in the hydraulic shops and eliminate the part obsolescence issues that are now beginning to emerge and grow. The requirements that cannot be met by COTS items are Shock, Vibration, EMI, MILVAN compatible, and hardened electrical components. These areas will all require R & D. *FY 2011 Base Plans:* The Hydraulic Test Stand Program is to provide a single test stand to replace all of the existing hydraulic test units; HCTS, HCT-10, and Pump & Motor test stand. This will simplify supply support, reduce the stock system footprint, reduce training requirements, introduce new technology, consolidate space requirements in the hydraulic shops and eliminate the part obsolescence issues that are now beginning to emerge and grow. The requirements that cannot be met by COTS items are Shock, Vibration, EMI, MILVAN compatible, and hardened electrical components. These areas will all require R & D.					
Accomplishments/Planned Programs Subtotals	3.115	3.255	1.849	0.000	1.849

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• APN/0705: *Ground Support Equipment*	161.892	143.310	142.148	0.000	142.148	135.848	136.929	139.235	141.597	0.000	1,000.959

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.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PRIMARY HARDWARE DEV-NGMH	SS/CPFF	NDI THOROFARE, NJ	7.255	1.000	Mar 2010	0.000		0.000		0.000	7.295	15.550	15.550
PRIMARY HARDWARE DEV-SFV	SS/CPFF	ENTWISTLE HUDSON, MA	0.345	0.597	Mar 2010	0.512	Mar 2011	0.000		0.512	5.922	7.376	7.376
PRIMARY HARDWARE DEV-HTS	C/CPFF	TBD TBD	0.000	0.000		0.586	Mar 2011	0.000		0.586	0.000	0.586	0.586
SYSTEMS ENGINEERING-SFV	WR	NAWCAD LAKEHURST, NJ	0.000	0.330	Nov 2009	0.398	Nov 2010	0.000		0.398	0.761	1.489	Continuing
SYSTEMS ENGINEERING-TETI	WR	NAWCAD LAKEHURST, NJ	2.617	0.328	Nov 2009	0.000		0.000		0.000	0.685	3.630	Continuing
SYSTEMS ENGINEERING-HTS	WR	NAWCAD LAKEHURST, NJ	0.000	0.000		0.353	Nov 2010	0.000		0.353	0.000	0.353	Continuing
PRIMARY HARDWARE DEV-TETI	C/CPFF	VARIOUS VARIOUS	2.202	0.300	Mar 2010	0.000		0.000		0.000	2.202	4.704	4.704
		Subtotal	12.419	2.555		1.849		0.000		1.849	16.865	33.688	28.216

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DEVELOPMENT SUPPORT EQUIP-NGMH	WR	NAWCAD LAKEHURST, NJ	0.747	0.350	Nov 2009	0.000		0.000		0.000	0.000	1.097	Continuing
DEVELOPMENT SUPPORT EQUIP-NGMH	C/CPFF	VARIOUS VARIOUS	7.702	0.350	Mar 2010	0.000		0.000		0.000	0.000	8.052	8.052
		Subtotal	8.449	0.700		0.000		0.000		0.000	0.000	9.149	8.052

Remarks

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
TEST & EVALUATION-EA	Various/ Various	VARIOUS VARIOUS	0.500	0.000		0.000		0.000		0.000	0.000	0.500	Continuing
		Subtotal	0.500	0.000		0.000		0.000		0.000	0.000	0.500	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*	

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	21.368	3.255		1.849		0.000		1.849	16.865	43.337	36.268

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*	

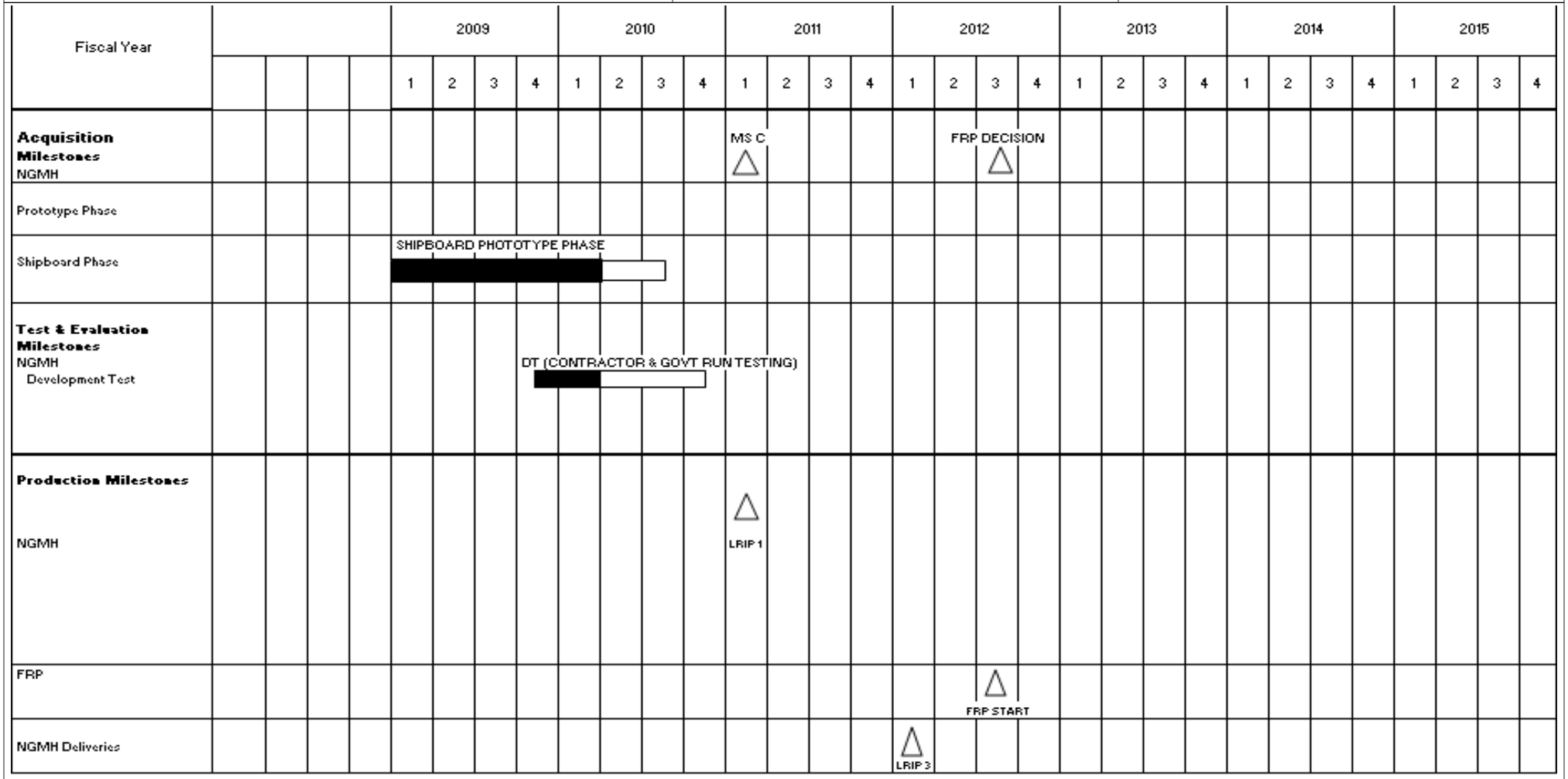

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*	

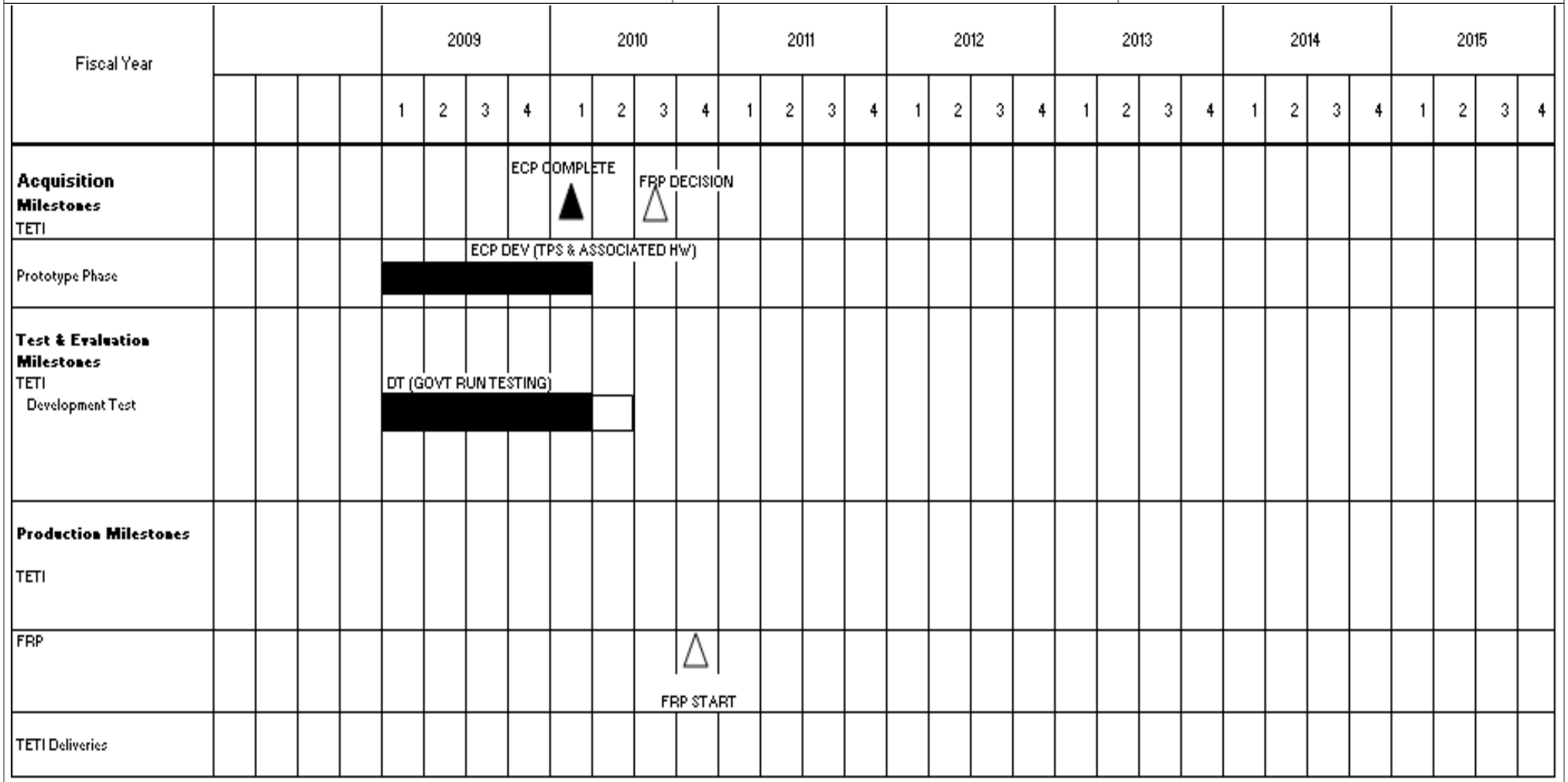

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

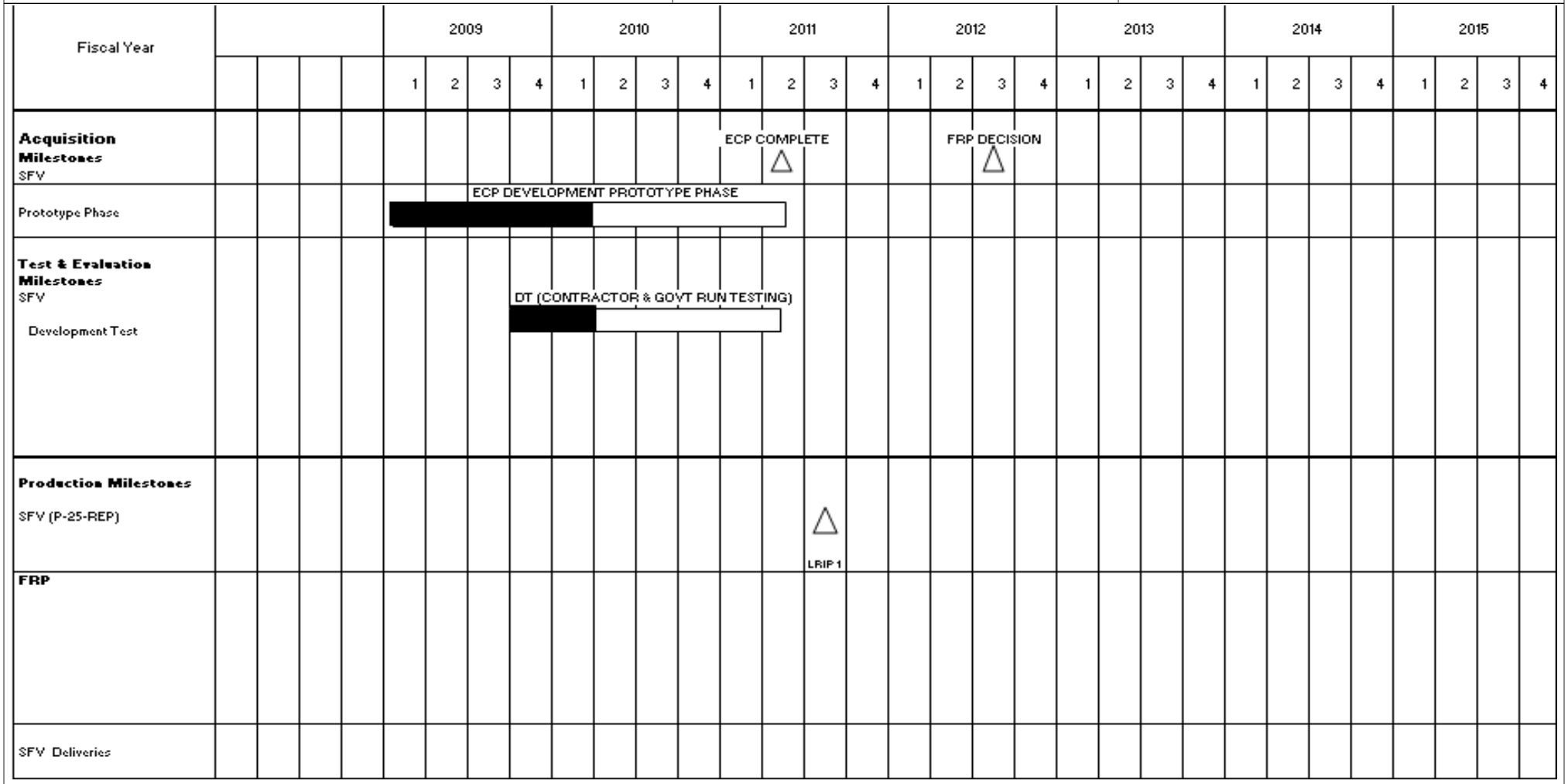

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

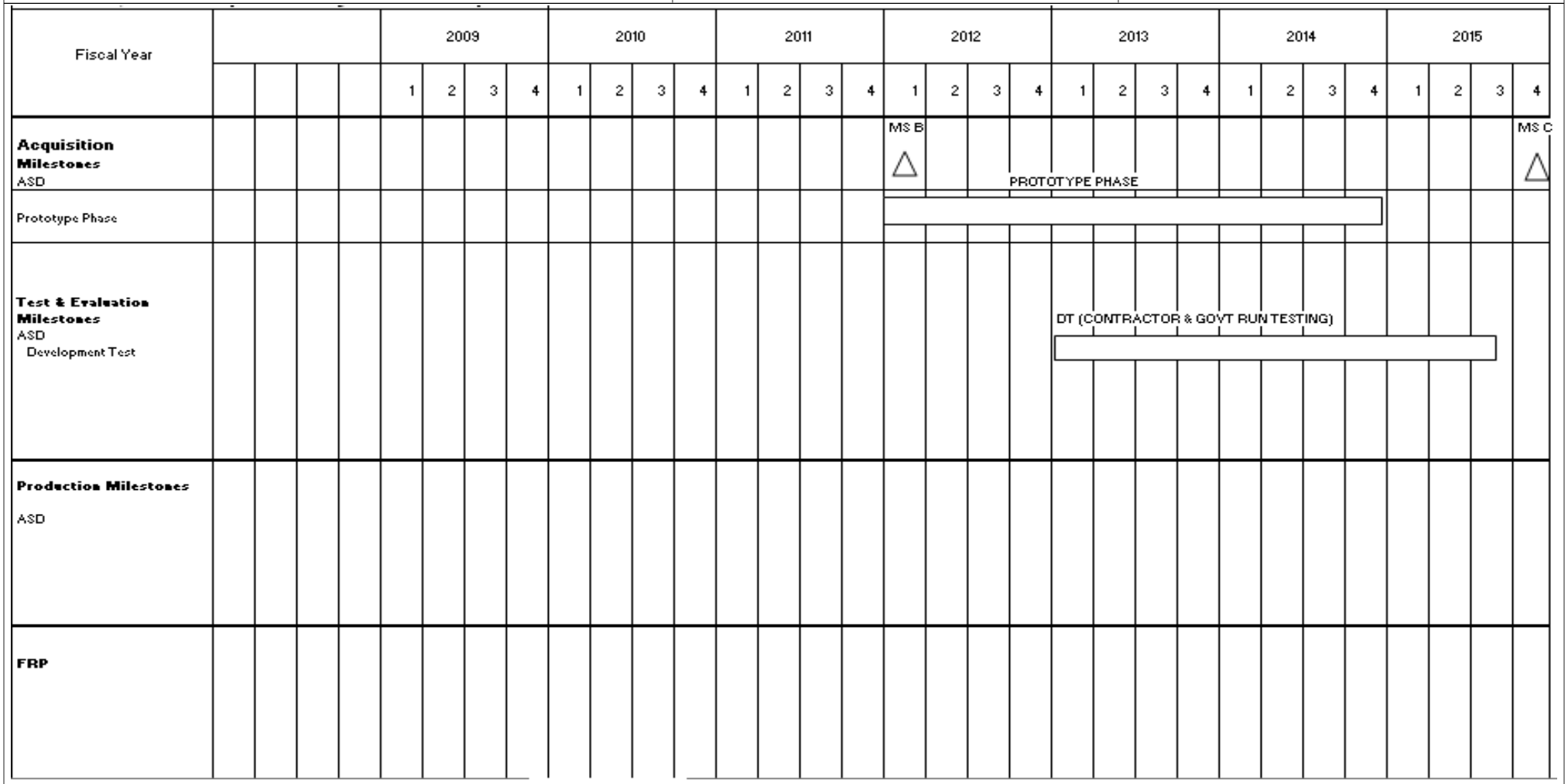

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

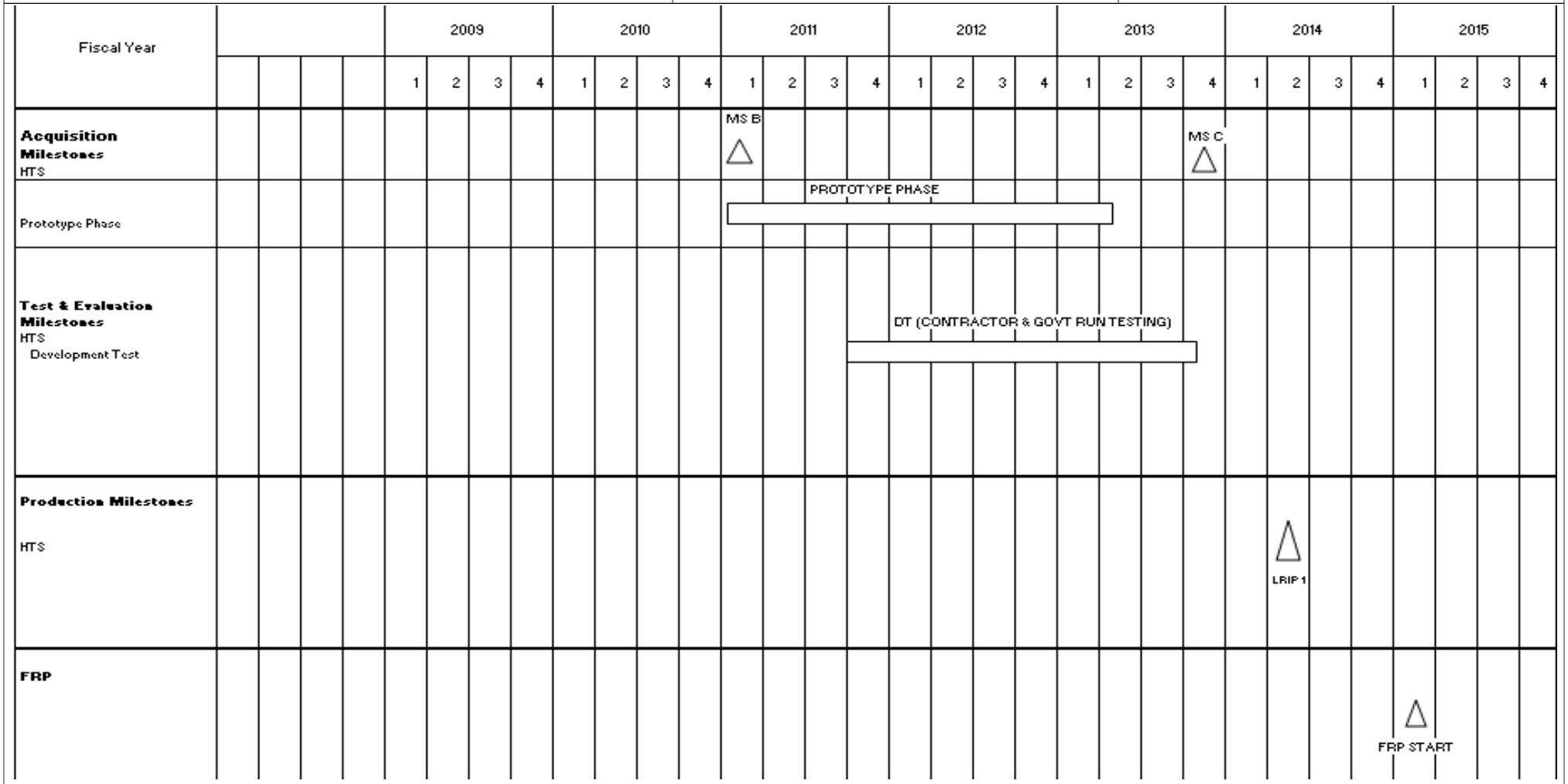

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
NGMH-SHIPBOARD PROTOTYPE PHASE	1	2009	3	2010
NGMH-DEVELOPMENTAL TEST	4	2009	4	2010
NGMH-MILESTONE C (MS C)	1	2011	1	2011
NGMH-START LOW RATE INITIAL PRODUCTION (LRIP) 1	1	2011	1	2011
NGMH-LOW RATE INITIAL PRODUCTION (LRIP) 3 DELIVERY	1	2012	1	2012
NGMH-FULL RATE PRODUCTION (FRP) DECISION	3	2012	3	2012
NGMH-FULL RATE PRODUCTION (FRP) START	3	2012	3	2012
TETI-ECP COMPLETE	1	2010	1	2010
TETI-ECP (TPS & ASSOCIATED HARDWARE)	1	2009	1	2010
TETI-DEVELOPMENTAL TEST	1	2009	2	2010
TETI-FULL RATE PRODUCTION (FRP) DECISION	3	2010	3	2010
TETI-FULL RATE PRODUCTION (FRP) START	4	2010	4	2010
SFV-ECP DEVELOPMENT PROTOTYPE PHASE	1	2009	2	2011
SFV-DEVELOPMENTAL TEST	4	2009	2	2011
SFV-ECP COMPLETE	2	2011	2	2011
SFV-START LOW RATE INITIAL PRODUCTION (LRIP) 1	3	2011	3	2011
SFV-FULL RATE PRODUCTION (FRP) DECISION	3	2012	3	2012
ASD-PROTOTYPE PHASE	1	2012	4	2014

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0601: *Acft Handling & Service Equip*

	Start		End	
Event	Quarter	Year	Quarter	Year
ASD-MILESTONE B	1	2012	1	2012
ASD-DEVELOPMENTAL TEST	1	2013	3	2015
ASD-MILESTONE C	4	2015	4	2015
HTS-PROTOTYPE PHASE	1	2011	2	2013
HTS-MILESTONE B	1	2011	1	2011
HTS-DEVELOPMENTAL TEST	4	2011	4	2013
HTS-MILESTONE C	4	2013	4	2013
HTS-START LOW RATE INITIAL PRODUCTION (LRIP) 1	2	2014	2	2014
HTS-FULL RATE PRODUCTION (FRP) START	1	2015	1	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0852: *Consolidated Auto Support System*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0852: *Consolidated Auto Support System*	8.653	27.581	31.926	0.000	31.926	23.630	7.033	7.190	7.337	Continuing	Continuing
Quantity of RDT&E Articles	2	2	7	0	7	0	0	0	0		

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.

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0852: *Consolidated Auto Support System*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
CASS Station Upgrades	0.200	0.000	0.000	0.000	0.000
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.					
FY 2009 Accomplishments: 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.					
CASS Modernization Development	8.453	0.000	0.000	0.000	0.000
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).					
FY 2009 Accomplishments: 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).					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
eCASS Development	0.000	26.868	31.107	0.000	31.107
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. *FY 2010 Plans:* 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. *FY 2011 Base Plans:* 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	0.000	0.713	0.819	0.000	0.819
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 2010 Plans:* 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					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
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 2011 Base Plans:* 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).					
Accomplishments/Planned Programs Subtotals	8.653	27.581	31.926	0.000	31.926

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• APN/0705: *P-1# 58 Common Ground Equip APN-7*	81.537	59.491	52.909	0.000	52.909	76.499	97.561	99.248	100.966	0.000	568.211

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.

E. Performance Metrics

Milestone Reviews

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 0852: *Consolidated Auto Support System*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev CASS EO	C/CPFF	VARIOUS VARIOUS	5.867	0.000		0.000		0.000		0.000	0.000	5.867	5.867
Primary Hdw Dev CASS Mod	C/CPFF	VARIOUS VARIOUS	20.595	0.000		0.000		0.000		0.000	0.000	20.595	20.595
Primary Hdw Dev CASS Upgrades	C/CPFF	VARIOUS VARIOUS	1.935	0.000		0.000		0.000		0.000	0.000	1.935	1.935
Primary Hdw Dev eCASS	C/CPFF	TBD TBD	0.000	23.550	Mar 2010	24.428	Dec 2010	0.000		24.428	95.270	143.248	143.248
Primary Hdw Dev Test Technology	C/CPFF	TBD TBD	0.000	0.413	Mar 2010	0.469	Mar 2011	0.000		0.469	51.420	52.302	52.302
		Subtotal	28.397	23.963		24.897		0.000		24.897	146.690	223.947	223.947

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev CASS Mod	WR	VARIOUS VARIOUS	12.403	0.000		0.000		0.000		0.000	0.000	12.403	Continuing
Primary Hdw Dev eCASS	WR	VARIOUS VARIOUS	0.000	3.100	Jan 2010	6.450	Jan 2011	0.000		6.450	11.000	20.550	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev Test Technology	WR	VARIOUS VARIOUS	0.000	0.200	Jan 2010	0.250	Jan 2011	0.000		0.250	14.000	14.450	Continuing
		Subtotal	12.403	3.300		6.700		0.000		6.700	25.000	47.403	

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev CASS Mod Travel	WR	VARIOUS VARIOUS	1.669	0.000		0.000		0.000		0.000	0.000	1.669	Continuing
Primary Hdw Dev eCASS Travel	WR	VARIOUS VARIOUS	0.000	0.218	May 2010	0.229	May 2011	0.000		0.229	4.000	4.447	Continuing
Primary Hdw Dev Test Tech Travel	WR	VARIOUS VARIOUS	0.000	0.100	May 2010	0.100	May 2011	0.000		0.100	3.125	3.325	Continuing
		Subtotal	1.669	0.318		0.329		0.000		0.329	7.125	9.441	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
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	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	42.469	27.581		31.926		0.000		31.926	178.815	280.791	223.947

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
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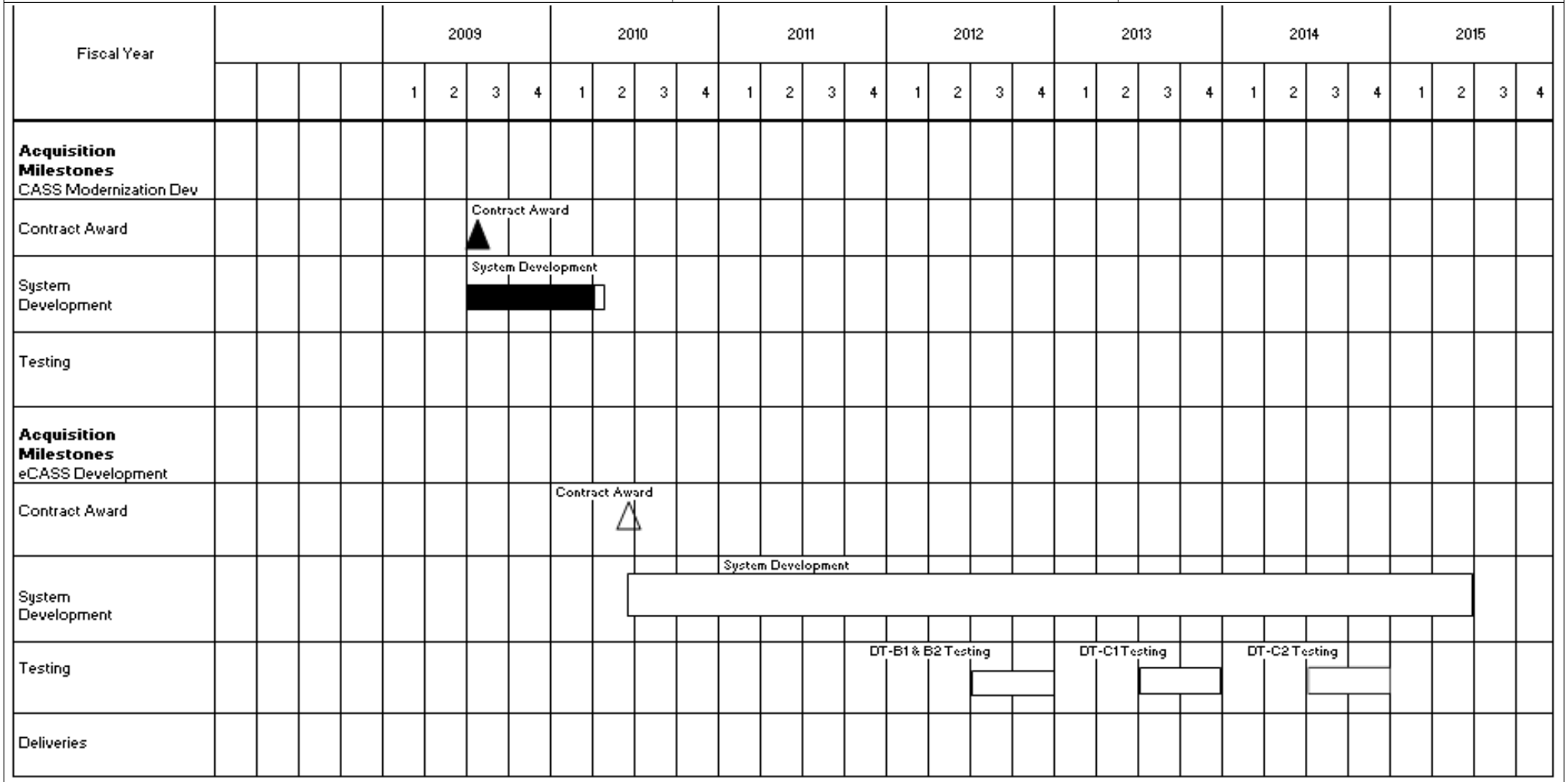

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*	**PROJECT** 0852: *Consolidated Auto Support System*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
CASS Mod Development Contract Award	3	2009	3	2009
CASS Mod System Development	3	2009	2	2010
eCASS Development Contract Award	2	2010	2	2010
eCASS System Development	2	2010	2	2015
eCASS DT-B1 & B2 Testing	3	2012	4	2012
eCASS DT-C1 Testing	3	2013	4	2013
eCASS DT-C2 Testing	3	2014	4	2014

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1041: *Acft Equip Repl/Maint Prog*	3.630	4.088	4.230	0.000	4.230	3.500	3.567	3.653	3.737	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Aircraft Equipment Reliability/Maintainability 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. AERMIP will demonstrate the feasibility of using cavitation peening for survivability improvement of ceramic armor and validate innovative coating techniques to enhance erosion resistance of engine blades and rotor blades in support of overseas operations.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Avionics and Wiring	1.125	1.088	0.997	0.000	0.997
FY 2009 Accomplishments: Completed Smart Wire assessment including safety-of-flight certification and initial flight testing. Performed function testing of arc fault in vibration laboratory. Performed additional testing on V-22 trainer including hard shorts and opens. Completed testing and evaluation of six adhesives to determine suitability as a replacement for MIL-PRF-8516 polysulfide sealants and approved two for aircraft use. These will make repair of connectors on aircraft more efficient and rapid.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: Demonstrate generator system diagnostics and health management system in aircraft on the ground. Demonstrate prototype generator system diagnostics and health management system in relevant environment. Demonstrate diagnostic and prognostic technologies for aircraft batteries and wiring systems 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. Evaluate automated triggering of avionics systems with higher than predicted failure rates, allowing the system to mitigate reliability issues in time to prevent availability problems. *FY 2011 Base Plans:* Qualify materials or pieces of equipment and the procedures/process required for their implementation. Pursue next-generation wiring, battery, and generator diagnosis and prognostics methods, and prove the applicability to Naval aviation. Address avionics-related reliability issues impacting multiple aircraft platforms.					
Air Vehicle	1.515	1.769	1.582	0.000	1.582
FY 2009 Accomplishments: Twenty-four month inspection of several aircraft at multiple locations validated effectiveness of new corrosion protection material. Output will be new material extending maintenance intervals, increasing availability and decreasing cost. Began evaluation of human factors related to aircraft corrosion root causes. Evaluated digital inflation tire reader to measure aircraft tire pressure. Began testing of out-of-autoclave technology for composite structure repairs. Developed new methods of structural repair. *FY 2010 Plans:* Validate measurement of flaws on bent titanium tubing for hydraulic systems. Test hydraulic fluid replacement with selected hydraulic components. Develop new methods of structural repair. Evaluate new methods of corrosion prevention control, including human factors approach. Improve sand					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
erosion resistance of coated impeller for auxiliary power unit systems. Evaluate non-chrome structural adhesive bonding primers. Design and integrate sand erosion test rig to simulate impeller operation on the aircraft in a sand/dust environment. Pursue subsystem improvements by increasing component reliability. *FY 2011 Base Plans:* Qualify materials or pieces of equipment and the procedures/process required for their implementation. Develop new methods of structural repair. Evaluate new methods of corrosion prevention control. Evaluate non-solvent plasma method to remove hydraulic contamination. Pursue subsystem improvements by increasing component reliability. Finalize titanium tubing crack detection methodology and tooling. Qualify and implement advanced non-chrome primers with corrosion protection properties.					
Systems Engineering (SE) Revitalization *FY 2009 Accomplishments:* Determined overall program strategy and work breakdown. Placed initial tasking on contracts to begin program. Began initial determinations of leading indicators, which are early predictors of program difficulty. Developed prioritized work plan for FY 10. *FY 2010 Plans:* 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. Further refine program work content and execute second round of contract effort. Continue effort on correlations of indicators and validate findings. Expand into an aligned four-phase system engineering process and develop improvements to the Systems Engineering Technical Review (SETR) process. Develop communications strategy to maximize program effectiveness among teams. Develop web-based tool.	0.972	0.947	0.939	0.000	0.939

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Continue validation of leading indicators for effectiveness. Continue development of improved four-phase system and SETR process. Using communications strategy developed in previous year and web-based tool, deliver usable validated products to engineering and program teams.					
Acquisition Workforce Fund *FY 2009 Accomplishments:* Funded DoD Acquisition Workforce Fund	0.018	0.000	0.000	0.000	0.000
NAE Corrosion *FY 2010 Plans:* Investigate and validate corrosion and maintenance process improvements due to flight line canopy shelters. Integrate shelters into flight line facilities. Complete and issue demonstration and validation report for EA-6B and F/A-18s. 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, reducing aircraft availability. 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. *FY 2011 Base Plans:* Continue to 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. Investigate products such as advanced performance topcoats designed to decrease cost of re-painting aircraft by extending service life of paint.	0.000	0.284	0.712	0.000	0.712

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Accomplishments/Planned Programs Subtotals	3.630	4.088	4.230	0.000	4.230

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

This is a non-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The AERMIP program will, at a minimum, fund 8 to 15 projects a year that investigate and evaluate R&M improvements to in-service, out-of-production aircraft equipment. AERMIP projects will have a greater than 75% success rate of insertion into DON warfighting systems or support infrastructure.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng - Avionics/ Wiring	WR	NAWCAD Patuxent River, MD	2.858	0.941	Nov 2009	0.805	Nov 2010	0.000		0.805	Continuing	Continuing	Continuing
Sys Eng - Avionics/ Wiring	SS/FFP	GE Niskayuna, NY	1.004	0.000		0.000		0.000		0.000	0.000	1.004	1.004
Sys Eng - Avionics/ Wiring	SS/FFP	Raytheon Indianapolis, IN	0.300	0.000		0.000		0.000		0.000	0.000	0.300	0.300
Sys Eng - Avionics/ Wiring	C/FFP	Various Various	0.275	0.039	Mar 2010	0.192	Mar 2011	0.000		0.192	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	NAWCAD Patuxent River, MD	4.130	1.063	Nov 2009	0.971	Nov 2010	0.000		0.971	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC San Diego, CA	0.458	0.000		0.050	Dec 2010	0.000		0.050	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC Cherry Point, NC	0.378	0.000		0.050	Dec 2010	0.000		0.050	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	WR	FRC Jacksonville, FL	0.410	0.000		0.050	Dec 2010	0.000		0.050	Continuing	Continuing	Continuing
Sys Eng - Air Vehicle	C/FFP	Various Various	0.057	0.558	Apr 2010	0.100	Apr 2011	0.000		0.100	0.717	1.432	1.434
Sys Eng - Air Vehicle	C/FFP	EMA Lexington Park, MD	0.200	0.000		0.000		0.000		0.000	0.000	0.200	0.200
Sys Eng - SE Revitalization	WR	NAWCAD Patuxent River, MD	0.015	0.768	Dec 2009	0.022	Dec 2010	0.000		0.022	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng - SE Revitalization	C/FFP	Various Various	0.957	0.185	Apr 2010	0.917	Apr 2011	0.000		0.917	Continuing	Continuing	Continuing
Sys Eng - NAE Corrosion	WR	NAWCAD Patuxent River, MD	0.000	0.259	Dec 2009	0.357	Dec 2010	0.000		0.357	Continuing	Continuing	Continuing
Sys Eng - NAE Corrosion	WR	FRC San Diego, CA	0.000	0.000		0.100	Dec 2010	0.000		0.100	Continuing	Continuing	Continuing
Sys Eng - NAE Corrosion	WR	FRC Cherry Point, NC	0.000	0.000		0.125	Dec 2010	0.000		0.125	Continuing	Continuing	Continuing
Sys Eng - NAE Corrosion	WR	FRC Jacksonville, FL	0.000	0.000		0.130	Dec 2010	0.000		0.130	Continuing	Continuing	Continuing
		Subtotal	11.042	3.813		3.869		0.000		3.869			

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Studies & Analyses	WR	NADEP San Diego, CA	0.193	0.000		0.000		0.000		0.000	0.000	0.193	0.193
Studies & Analyses	WR	NAWCAD	12.171	0.000		0.000		0.000		0.000	0.000	12.171	12.171

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1041: *Acft Equip Repl/Maint Prog*

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Patuxent River, MD											
Studies & Analyses - NAE Corrosion	WR	NAWCAD Patuxent River, MD	0.000	0.025	Dec 2009	0.091	Dec 2010	0.000		0.091	Continuing	Continuing	Continuing
		Subtotal	12.364	0.025		0.091		0.000		0.091			

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	SS/FFP	Various Various	1.859	0.000		0.000		0.000		0.000	0.000	1.859	1.859
Program Management Support	WR	NAWCAD Patuxent River, MD	0.710	0.245	Nov 2009	0.250	Nov 2010	0.000		0.250	Continuing	Continuing	Continuing
Travel	WR	NAWCAD Patuxent River, MD	0.069	0.005	Nov 2009	0.020	Nov 2010	0.000		0.020	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various/ Various	Various Various	0.018	0.000		0.000		0.000		0.000	0.000	0.018	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
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Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	2.656	0.250		0.270		0.000		0.270			

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	26.062	4.088		4.230		0.000		4.230			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*	**PROJECT** 1041: *Acft Equip Repl/Maint Prog*

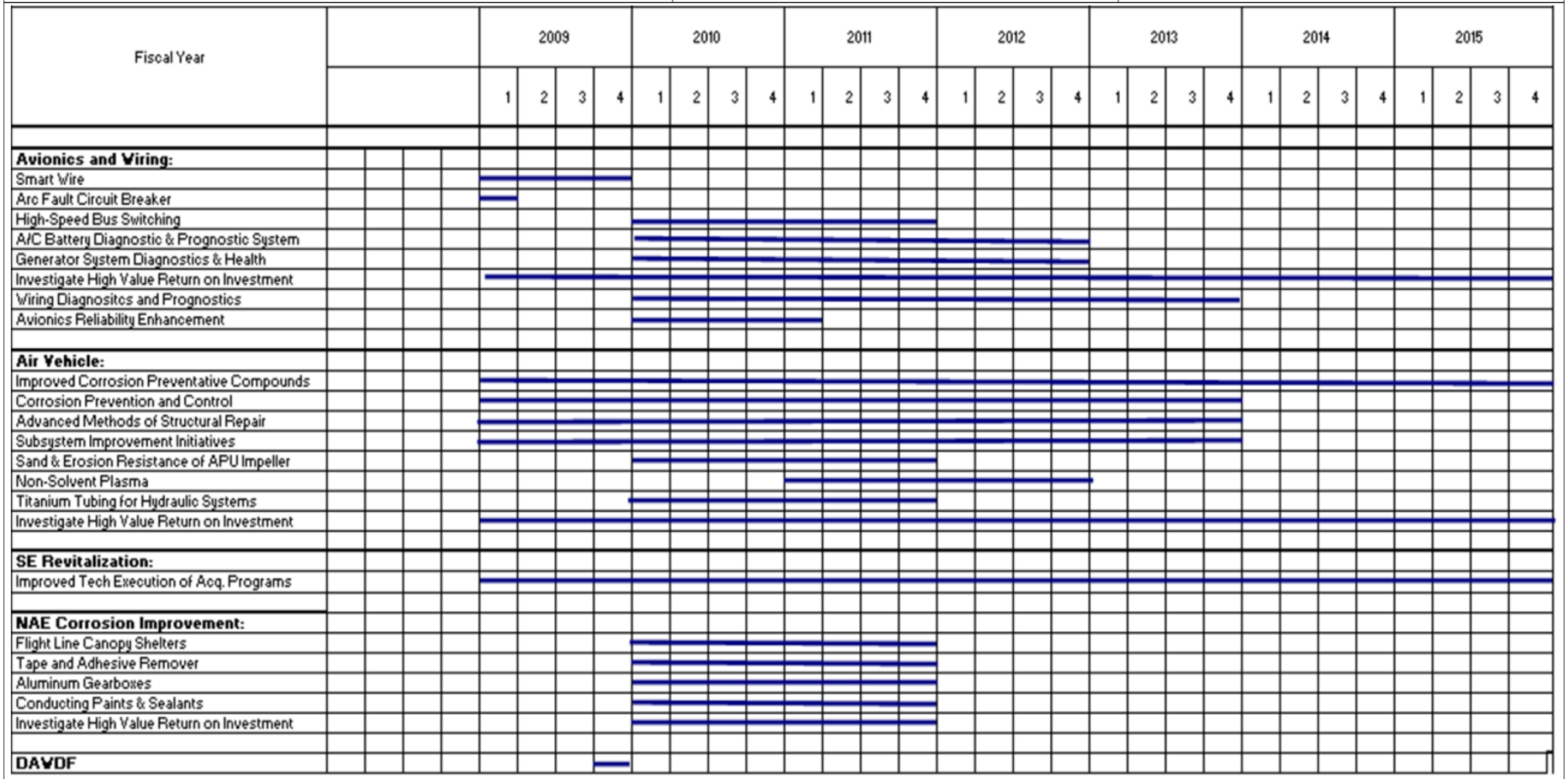

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1041: *Acft Equip Repl/Maint Prog*

Schedule Details

	Start		End	
Event	Quarter	Year	Quarter	Year
Avionics & Wiring: Smart Wire	1	2009	4	2009
Avionics & Wiring: Arc Fault Circuit Breaker	1	2009	1	2009
Avionics & Wiring: High-Speed Bus Switching	1	2010	4	2011
Avionics & Wiring: Aircraft Battery Diagnostic & Prognostic System	1	2010	4	2012
Avionics & Wiring: Generator System Diagnostics & Health	1	2010	4	2012
Avionics & Wiring: Investigate High Value Return on Investment	1	2009	4	2015
Avionics & Wiring: Wiring Diagnostics and Prognostics	1	2010	4	2013
Avionics & Wiring: Avionics Reliability Enhancements	1	2010	1	2011
Air Vehicle: Improved Corrosion Preventative Compounds	1	2009	4	2015
Air Vehicle: Corrosion Prevention and Control	1	2009	4	2013
Air Vehicle: Advanced Methods of Structural Repair	1	2009	4	2013
Air Vehicle: Subsystem Improvement Initiatives	1	2009	4	2013
Air Vehicle: Sand & Erosion Resistance of APU Impeller	1	2010	4	2011
Air Vehicle: Non-Solvent Plasma	1	2011	4	2012
Air Vehicle: Titanium Tubing for Hydraulic Systems	1	2010	4	2011
Air Vehicle: Investigate High Value Return on Investment	1	2009	4	2015
SE Revitalization: Improved Technical Excellence of Acquisition Programs	1	2009	4	2015
NAE Corrosion Improvement: Flight Line Canopy Shelters	1	2010	4	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
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	Start		End	
Event	Quarter	Year	Quarter	Year
NAE Corrosion Improvement: Tape and Adhesive Remover	1	2010	4	2011
NAE Corrosion Improvement: Aluminum Gearboxes	1	2010	4	2011
NAE Corrosion Improvement: Conducting Paints & Sealants	1	2010	4	2011
NAE Corrosion Improvement: Investigate High Value Return on Investment	1	2010	4	2011
Acquisition Workforce Fund	4	2009	4	2009

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1355: *Acft Engines Comp Imp Prog*	57.878	65.568	75.583	0.000	75.583	80.654	81.781	83.123	84.300	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

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 OPERATIONS DESERT SHIELD/DESERT STORM, ENDURING FREEDOM, and IRAQI FREEDOM due to sand erosion. In addition, new problems arise through actual fleet deployment and usage of the aircraft. System 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 that 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.

B. Accomplishments/Planned Program ($ in Millions)

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
P3, E2, C2, C130 (T56)	4.010	5.880	4.873	0.000	4.873
FY 2009 Accomplishments: New propeller shaft qualified - life improvement. Engine turbine life analysis completed - maintains current life limits. Compressor spin pit testing complete - verifies current life limits. Competed accelerated mission testing and proactively identified future reliability degraders. *FY 2010 Plans:* Conduct analytical condition inspections of high time hardware in order to identify new reliability degraders. Initiate combustor liner durability improvement redesigns. Maintain life management analysis to ensure safe operation of high time parts. Continue to investigate all service revealed deficiencies. Initiate engineering change for a new prop shaft with no life limit - improves time on wing. Qualify new compressor blade coating - improves erosion resistance and increases time on wing. Initiate C-2 engine reliability improvement study. *FY 2011 Base Plans:* Conduct analytical condition inspections of high time hardware in order to identify new reliability degraders. Qualify redesigned combustor liner. Maintain life management analysis to ensure safe operation of high time parts. Continue to investigate all service revealed deficiencies. Engineering change for new compressor blade coating. Redesigns for C-2 engine reliability improvements.					
E2/C2/C130/P3 (Props)	1.732	1.500	1.451	0.000	1.451
FY 2009 Accomplishments: NP2000 propeller blade redesign - reliability improvement. P-3 propeller failure mode risk assessment completed - new maintenance plan improves safety. E-2 propeller active balance system development kicked off - redesign offers significant reliability improvement for mission system components.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: NP2000 rear cone analysis - ensure safe operation within current maintenance plan. NP2000 analytical condition inspection to identify new reliability degraders. Continue E-2 proprller active balance development. Conduct P-3 propeller taper bore corrosion testing - improve corrosion resistance. Develop new oil level float switch for C-130 - improve propeller reliability. *FY 2011 Base Plans:* Complete NP2000 rear cone analysis and redesign. Test and qualify E-2 propeller active balance system. Continue NP2000 analytical condition inspection to identify new reliability degraders. Initiate redesign of NP2000 rear cone.					
EA-6B (J52) *FY 2009 Accomplishments:* 4.5 bearing cage redesign to address safety of flight issue was validated by engine test. 4.5 bearing tracer element was validated in an engine test. *FY 2010 Plans:* 4.5 bearing Engineering Change Proposals will be validated and approved allowing installations of the new bearing to begin in 2010. New serviceable limits will be submitted for both turbine shafts as well as the compressor rear hub allowing the reduction of scrapped hardware. Maintenance awareness will be presented at Operational & Intermediate levels. *FY 2011 Base Plans:* Continue FY2010 plan. Maintenance awareness will be presented at Operational & Intermediate levels.	3.450	3.400	2.639	0.000	2.639
Mature Aircraft (J85)	0.877	0.890	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: Afterburner No-Light Study complete, Afterburner margin test effort procedure complete, and operational line check is in process. Controls and accessories improvements - Evaluated controls and accessories at depot, produced list of desired inspections, evaluated data from inspections and Analytical Condition Inspections, and provided recommendations for maintenance/redesign. The final Engineering Change Proposal, which addresses fuel leaks by replacing seals with a different material, is being submitted for approval for the Main Fuel Control. A draft of the Engineering Change Proposal has been submitted to the Navy for review. Both of these Engineering Change Proposals address fuel leakage which is one of the high Unscheduled Engine Removal drivers for this engine. *FY 2010 Plans:* Afterburner No-Light: Plan to collect fleet data on no-light point and to check the next Functional Check Flight to see if it passes. Life Management - Plan to begin inspecting time-expired parts as part of validating part-life models.					
SH-60B/F, HH-60H, MH-60R/S (T700) *FY 2009 Accomplishments:* Completed engine hot restart stall root cause and corrective actions. Completed main gearbox material replacement trade study, release tail gear box output bevel gear cracking field mitigation to the fleet. *FY 2010 Plans:* Complete the final tail gear box output bevel gear crack propagation testing and update fleet inspection requirements, if required. Begin incorporation of T700 hot restart stall mitigation through design changes. Identify cost and readiness degraders on the T700 and H-60 drive system.	2.763	3.900	3.782	0.000	3.782

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: Complete T700 hot restart stall mitigation through design changes. Begin redesign work to reduce impact of cost and readiness drivers for the engine and drive system.					
UH1N (T400) *FY 2009 Accomplishments:* Provide Build Process Efficiencies for increased reliability and cost reduction. Provide an improved Magnetic Chip Detector to address fleet failures. *FY 2010 Plans:* Provide Build Process Efficiencies for increased reliability and cost reduction. Address T400 parts obsolescence. *FY 2011 Base Plans:* Provide Build Process Efficiencies for increased reliability and cost reduction. Address T400 parts obsolescence.	1.324	0.380	0.352	0.000	0.352
AV-8B (F402) *FY 2009 Accomplishments:* Detailed design of Low Plasticity Burnishing (LPB) solution for Low Pressure Compressor (LPC) 1 blade dovetail and Low Pressure Compressor 1 disk slot. Preliminary design requirements for Low Plasticity Burnishing solution for Low Pressure Compressor 1, Low Pressure Compressor 2, Low Pressure Compressor 3 blade airfoils and Low Pressure Compressor 1 vane. Updated life management plan, preliminary vibration analysis, and establishment of engine performance tool. Execution of flight test to evaluate design changes for Low Pressure Compressor 1 blade failures.	6.334	5.500	5.013	0.000	5.013

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: ECPs (engineering change proposals) submitted for Low Pressure Compressor 1 disk slot, Low Pressure Compressor 1 blade dovetail, and Low Pressure Ccompressor 1 vane. Detailed design for Low Pressure Compressor 1, Low Pressure Compressor 2, Low Pressure Compressor 3 blade airfoil Low Plasticity Burnishing. Preliminary design effort to extend critical rotating part lives. Engineering Change Proposal submitted for EVICS (enhanced variable inlet guide vane control system) fuel leak remedy. Fuel manifold pipe redesign Engineering Change Proposal submission. *FY 2011 Base Plans:* Engineering Change Proposal submission for EVICS torque motor roll cage redesign. Engineering Change Proposal submission for Low Pressure Compressor 1, Low Pressure Compressor 2, Low Pressure Compressor 3 blade airfoil Low Plasticity Burnishing. Detailed design effort to extend critical rotating part lives.					
H-53/H-46/H-3 (T58/T64)	8.557	8.500	5.640	0.000	5.640
FY 2009 Accomplishments: H-46/H-3 (T58) Understand the benefits and limitation of Titanium Nitride by conducting a Sand ingestion/Flutter Test. H-53 (T64) Base funded programs. Completed Variable Guide Vanes (VGV) and fuel nozzle redesigns. Engineering Change proposals in work. Gas Generator Turbine (GGT) nozzle doublets effort continues. Mid sump improvement effort started. Life management analysis and Reliability Centered Maintenance (RCM) are ongoing efforts that will span all of the FYs covered by this document. *FY 2010 Plans:* H-46/H-3 (T58) Investigate Pressure Relief Valve diaphragm failures and develop corrective action. Test and possibly qualify Next Generation Coating for 1st stage compressor blades.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
H-53 (T64) Base funded programs. Improved compressor blade retention will be completed. Gas Generator Turbine nozzle doublets and mid sump improvements continue. Modernized torque sensor effort initiated. Life management analysis and Reliability Centered Maintenance efforts continue. *FY 2011 Base Plans:* H-46/H-3 (T58) Continued qualification of Next Generation Coating for 1st stage compressor blades. H-53 (T64) Mid sump improvements and modernized torque sensor effort continue. Fuel control reliability improvement program initiated. Life management analysis and Reliability Centered Maintenance efforts continue.					
F-18 C/D/E/F (F414/F404) *FY 2009 Accomplishments:* Fan Blade Dovetail Coating Improvement. Afterburner durability improvements. Compressor stall mitigation. Generator Converter Unit durability root cause identification. Fuel manifold durability improvements. *FY 2010 Plans:* Fan and High Pressure Compressor Foreign Object Damage Limit Expansion. Combustor durability improvements. Fan blade dovetail durability improvements. Component analysis for service life extension. *FY 2011 Base Plans:* Oil system improvements to address pressure cautions. Component analysis for service life extension. Full Authority Digital Electronic Control software modifications for reduced removals for engine stalls.	13.721	16.149	10.629	0.000	10.629

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
T-45 (F405)	1.666	2.500	2.198	0.000	2.198
FY 2009 Accomplishments: High Pressure Compressor stator and Low Pressure Turbine blade flight safety hazard mitigated and the initial cold section reliability improvement engineering change proposal approved. *FY 2010 Plans:* Complete cold and hot section reliability improvement design change task. *FY 2011 Base Plans:* Address top safety issues reported from fleet. Analysis and redesign components based on service revealed deficiencies.					
V-22 Propulsion	1.928	5.200	0.000	0.000	0.000
FY 2009 Accomplishments: Constant Frequency Generator-Tilt Axis Gearbox overheat investigation; Auxillary Power Unit starter testing; Full Authority Digital Electronic Control Hardware-in-the-Loop test bench development; Lower nacelle (engine/eaps/nacelle blower/Infra Red suppressor) optimization study. *FY 2010 Plans:* Constant Frequency Generator design modifications to eliminate safety of flight issue; Nacelle blower modifications to eliminate safety of flight issues; Drive system and electrical power system lead-the-fleet testing; Proprotor gearbox fatique life improvement; Continue to address emergent safety of flight issued.					
Multi-Platform Product Support Teams	11.516	11.769	12.006	0.000	12.006
FY 2009 Accomplishments: Projects 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					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
simulation, diagnostics, engine reliability assessment, and structural integrity; improve products and processes for fuels, lubricants, and refueling equipment; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. *FY 2010 Plans:* Projects 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; and improve electrical system product support, wiring, and battery systems. Includes funding for Government Furnished Equipment fuel provided in support of engine developmental and qualification testing. *FY 2011 Base Plans:* Continue FY2010 Plan.					
F-35 (JSF) (F135) *FY 2011 Base Plans:* Begin accelerated mission testing of the F135 engine as a lead-the-fleet test program. This program requires dedicated test assets be procured or refurbished as well as significant test cell run time to ensure flight safety and optimized readiness as the Marine Corps short take off/vertical landing (STOVL) aircraft enter service in 2012. Component level work will also begin in order to extend life limits of parts that are critical to extended time on wing and reduce cost of ownership.	0.000	0.000	27.000	0.000	27.000
Accomplishments/Planned Programs Subtotals	57.878	65.568	75.583	0.000	75.583

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

This is a NON-ACAT program. Procurement strategy is determined by market survey and cooperative opportunities.

E. Performance Metrics

The Component Improvement Program (CIP) will support engineering design and development efforts for 100% of the safety of flight issues on in-service propulsion & power systems covered under the program. In FY10, this equates to more than 200 individual Engineering Project Descriptions (EPDs). CIP will also address reliability and maintainability deficiencies equating to at least another 150 individual EPDs. Similar projects have increased the aggregate engine reliability across the USN/ USMC fleet, as measured by the mean flight hours between engine removals, by 40% over the past six years.

Program execution will be actively managed on 100% of the projects via contractor earned value data and overall obligation and expenditure rates as reflected in NAVY ERP. Data will be analyzed and measured against OSD/FMB benchmarks on a monthly basis.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng F110 Engine Program	SS/CPAF	GE OHIO	17.992	0.000		0.000		0.000		0.000	0.000	17.992	17.992
Sys Eng F402 Engine Program	WR	NAWCAD PAX RIVER, MD	6.741	1.705	Oct 2009	1.490	Oct 2010	0.000		1.490	Continuing	Continuing	Continuing
Sys Eng F402 Engine Program	SS/CPFF	ROLLS ROYCE UK	48.073	3.795	Dec 2009	3.318	Dec 2010	0.000		3.318	0.000	55.186	55.186
Sys Eng T58/T64 Engine Program	SS/CPFF	GE MASS	66.703	5.270	Oct 2009	2.508	Oct 2010	0.000		2.508	0.000	74.481	76.581
Sys Eng T58/T64 Engine Program	WR	NAWCAD PAX RIVER, MD	18.441	3.230	Oct 2009	2.824	Oct 2010	0.000		2.824	Continuing	Continuing	Continuing
Sys Eng J52 Engine Program	SS/CPFF	P&W FLORIDA	34.527	1.836	Oct 2009	1.605	Oct 2010	0.000		1.605	0.000	37.968	37.968
Sys Eng J52 Engine Program	WR	NAWCAD PAX RIVER, MD	8.381	1.564	Oct 2009	1.367	Oct 2010	0.000		1.367	Continuing	Continuing	Continuing
Sys Eng T56 Engine Program	SS/CPFF	ROLLS ROYCE IN	27.596	4.116	Feb 2010	3.599	Feb 2011	0.000		3.599	0.000	35.311	35.311
Sys Eng T56 Engine Program	WR	NAWCAD PAX RIVER, MD	21.054	1.764	Oct 2009	1.542	Oct 2010	0.000		1.542	Continuing	Continuing	Continuing
Sys Eng F405 Engine Program	SS/CPFF	ROLLS ROYCE UK	23.082	1.457	Dec 2009	1.274	Dec 2010	0.000		1.274	0.000	25.813	25.813
Sys Eng F405 Engine Program	WR	NAWCAD PAX RIVER, MD	0.767	1.043	Oct 2009	0.912	Oct 2010	0.000		0.912	Continuing	Continuing	Continuing
Sys Eng F414/F404 Engine Program	SS/CPFF	GE MASS	69.211	12.071	Dec 2009	8.476	Dec 2010	0.000		8.476	0.000	89.758	92.131
	WR	NAWCAD	6.324	4.078	Oct 2009	3.566	Oct 2010	0.000		3.566	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*	

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Sys Eng F414/F404 Engine Program		PAX RIVER, MD											
Sys Eng T700 Engine Program	SS/CPFF	GE MASS	19.131	2.730	Jan 2010	2.388	Jan 2011	0.000		2.388	0.000	24.249	24.249
Sys Eng T700 Engine Program	WR	NAWCAD PAX RIVER, MD	8.248	1.170	Oct 2009	1.022	Oct 2010	0.000		1.022	Continuing	Continuing	Continuing
Sys Eng TF34 Engine Program	WR	NAWCAD PAX RIVER, MD	0.338	0.000		0.000		0.000		0.000	0.000	0.338	0.338
Sys Eng TF34 Engine Program	SS/CPFF	GE OHIO	7.845	0.000		0.000		0.000		0.000	0.000	7.845	7.845
Sys Eng V-22 Propulsion Program	SS/CPFF	BELL BOEING TX	3.528	3.400	Dec 2009	0.000		0.000		0.000	0.000	6.928	6.928
Sys Eng V-22 Propulsion Program	WR	NAWCAD PAX RIVER, MD	0.000	1.800	Oct 2009	0.000		0.000		0.000	0.000	1.800	1.800
Sys Eng T400 Engine Program	SS/CPFF	P&W FLORIDA	4.498	0.380	Dec 2009	0.332	Dec 2010	0.000		0.332	0.000	5.210	5.210
Sys Eng T400 Engine Program	WR	NAWCAD PAX RIVER, MD	0.737	0.000		0.000		0.000		0.000	0.000	0.737	0.737
Sys Eng J85 Engine Program	SS/CPFF	GE OHIO	4.494	0.401	Nov 2009	0.000		0.000		0.000	0.000	4.895	4.895
Sys Eng J85 Engine Program	WR	NAWCAD PAX RIVER, MD	0.478	0.489	Oct 2009	0.000		0.000		0.000	0.000	0.967	0.967
Sys Eng F100 Engine Program	WR	NAWCAD PAX RIVER, MD	0.200	0.000		0.000		0.000		0.000	0.000	0.200	0.200
Sys Eng Props Program	SS/CPFF		10.926	1.500	Dec 2009	1.313	Dec 2010	0.000		1.313	0.000	13.739	13.739

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		HAM SUNSTRAND CON											
Sys Eng Lab Fld Activity-1.0 or more	WR	NAWCAD PAX RIVER, MD	170.089	9.537	Oct 2009	9.046	Oct 2010	0.000		9.046	Continuing	Continuing	Continuing
Sys Eng F135 Engine Program	SS/CPFF	P&W CON	0.000	0.000	Oct 2009	27.000	Oct 2010	0.000		27.000	Continuing	Continuing	Continuing
GFE*	Reqn	DES/DLA Various	8.103	1.500	Oct 2009	1.310	Oct 2010	0.000		1.310	Continuing	Continuing	Continuing
Award Fees	C/CPAF	Various Various	1.305	0.000		0.000		0.000		0.000	0.000	1.305	1.305
Sys Eng Other In-House Spt	Various/ Various	Various Various	18.928	0.315	Oct 2009	0.274	Oct 2010	0.000		0.274	Continuing	Continuing	Continuing
Sys Eng Contracts under 1.0M	Various/ Various	Various Various	16.114	0.000		0.000		0.000		0.000	0.000	16.114	16.114
		Subtotal	623.854	65.151		75.166		0.000		75.166			

Remarks

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	Various/ TBD	Various Various	7.009	0.307	Dec 2009	0.307	Dec 2010	0.000		0.307	Continuing	Continuing	Continuing
		Subtotal	7.009	0.307		0.307		0.000		0.307			

Remarks

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	Various/ TBD	Various Various	3.173	0.053	Dec 2009	0.053	Dec 2010	0.000		0.053	Continuing	Continuing	Continuing
		Subtotal	3.173	0.053		0.053		0.000		0.053			

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Mgmt Support	Various/ Various	Various Various	1.447	0.000	Dec 2009	0.000		0.000		0.000	0.000	1.447	1.559
Travel	Various/ Various	NAVAIR PAX RIVER, MD	0.488	0.057	Oct 2009	0.057	Oct 2010	0.000		0.057	Continuing	Continuing	Continuing
		Subtotal	1.935	0.057		0.057		0.000		0.057			

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	635.971	65.568		75.583		0.000		75.583			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 1355: *Acft Engines Comp Imp Prog*

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 3190: *Multi-Purpose Bomb Racks*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
3190: *Multi-Purpose Bomb Racks*	9.510	22.329	20.023	0.000	20.023	25.854	16.951	18.004	15.541	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

3190- Multi-Purpose Bomb Racks (MPBR): The MPBR will replace the BRU-41 / 42 / 33 / 55 for the F/A-18E/F platform and provide for the carriage and release of both tactical and training stores on one common rack.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
MULTI-PURPOSE BOMB RACK(MPBR) DEV.	8.056	15.440	12.904	0.000	12.904

The MPBR funding develops a bomb rack to replace the BRU-41 / 42 / 33 / 55 for the F/A-18E/F. The vendors effort will be required not only in rack development, but also in a support role throughout the integration effort.

FY 2009 Accomplishments:

FY 09 : Completed MPBR requirements documentation and source selection. Commenced design and development of the MPBR.

FY 2010 Plans:

FY10 : Continue MPBR design and development and conduct vendor wind tunnel testing and analysis.

FY 2011 Base Plans:

FY11 Base : Begin rack MPBR prototype development and fabrication after electrical and mechanical designs are complete. Once integration assets are available the design and/or modification of

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 3190: *Multi-Purpose Bomb Racks*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Support Equipment (SE) will occur. This effort will occur at both the rack and at the system/platform level.					
MULTI-PURPOSE BOMB RACK SOFTWARE DEV. The MPBR funding will be used to develop the aircraft software required to interface the bomb rack and the stores it will carry with the aircraft. This interface is essential to the safe carriage and successful stores release. *FY 2009 Accomplishments:* FY09 : Identified MPBR platform software requirements definition and coding. *FY 2010 Plans:* FY10 : Continue MPBR refinement of the rack and platform software requirements. *FY 2011 Base Plans:* FY11 Base : Provide MPBR software to test activities to identify deficiencies and make corrections as required. Additional coding will be performed as expanded stores integration occurs.	1.454	4.102	4.022	0.000	4.022
MULTI-PURPOSE BOMB RACK TESTING The MPBR testing will include ground (aircraft and test stand) and flight integration testing. These efforts will begin prior to delivery and will occur throughout the EMD efforts of this rack. They will begin with prototype design coordination, initial test planning and will progress to ground and flight test events. *FY 2010 Plans:* FY 10 : Coordinate MPBR design concept and test planning with rack vendor and begin subcomponent testing.	0.000	2.787	3.097	0.000	3.097

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2011 Base Plans: FY 11 Base : Perform MPBR initial test planning for ground rack testing with a build-up toward first flight testing.					
Accomplishments/Planned Programs Subtotals	9.510	22.329	20.023	0.000	20.023

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• APN-7/072000: *War Consumables*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.700	19.900	315.900	357.500

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 awarded through China Lake CA.

E. Performance Metrics

Successfully complete milestones: System Functional Review (SFR), Preliminary Design Review (PDR), and Critical Design Review (CDR).

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 3190: *Multi-Purpose Bomb Racks*

Product Development ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPIF	Various Various	5.415	11.207	Jan 2010	11.442	Mar 2011	0.000		11.442	13.985	42.049	42.049
		Subtotal	5.415	11.207		11.442		0.000		11.442	13.985	42.049	42.049

Remarks

Support ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NAWCAD LAKEHURST, NJ	0.000	0.000		0.000		0.000		0.000	2.700	2.700	Continuing
Software Developoment	WR	NAWCWD CHINA LAKE, CA	1.454	4.102	Mar 2010	4.022	Mar 2011	0.000		4.022	19.015	28.593	Continuing
		Subtotal	1.454	4.102		4.022		0.000		4.022	21.715	31.293	

Remarks

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 3190: *Multi-Purpose Bomb Racks*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Test & Evaluation	WR	NAWC AD PATUXENTRIVER, MD	0.000	0.204	Dec 2009	0.414	Oct 2010	0.000		0.414	31.688	32.306	Continuing
Operational Test & Evaluation	WR	COMOPTEVFOR NORFOLK, VA	0.000	0.000		0.000		0.000		0.000	2.676	2.676	Continuing
Wind Tunnel Testing	Various/ TBD	TBD TBD	0.000	2.583	Sep 2010	1.015	Dec 2010	0.000		1.015	0.000	3.598	Continuing
		Subtotal	0.000	2.787		1.429		0.000		1.429	34.364	38.580	

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Contractor Engineering Support	SS/TBD	SAIC SAN DIEGO, CA	0.376	0.500	Mar 2010	0.500	Nov 2010	0.000		0.500	2.059	3.435	3.435
Government Engineering Support	WR	NAWCAD PATUXENT RIVER, MD	2.004	0.893	Mar 2010	0.750	Nov 2010	0.000		0.750	4.155	7.802	Continuing
Government Engineering Support	WR	NAWCWD CHINA LAKE, CA	1.945	2.000	Feb 2010	1.000	Nov 2010	0.000		1.000	4.373	9.318	Continuing
	WR	NAWCAD	1.439	0.640	Jan 2010	0.680	Nov 2010	0.000		0.680	1.814	4.573	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 3190: *Multi-Purpose Bomb Racks*

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support		PATUXENT RIVER, MD											
Travel	Various/ Various	NAVAUR PATUXENT RIVER MD	0.200	0.200	Oct 2009	0.200	Oct 2010	0.000		0.200	0.900	1.500	Continuing
		Subtotal	5.964	4.233		3.130		0.000		3.130	13.301	26.628	3.435

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	12.833	22.329		20.023		0.000		20.023	83.365	138.550	45.484

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*	**PROJECT** 3190: *Multi-Purpose Bomb Racks*

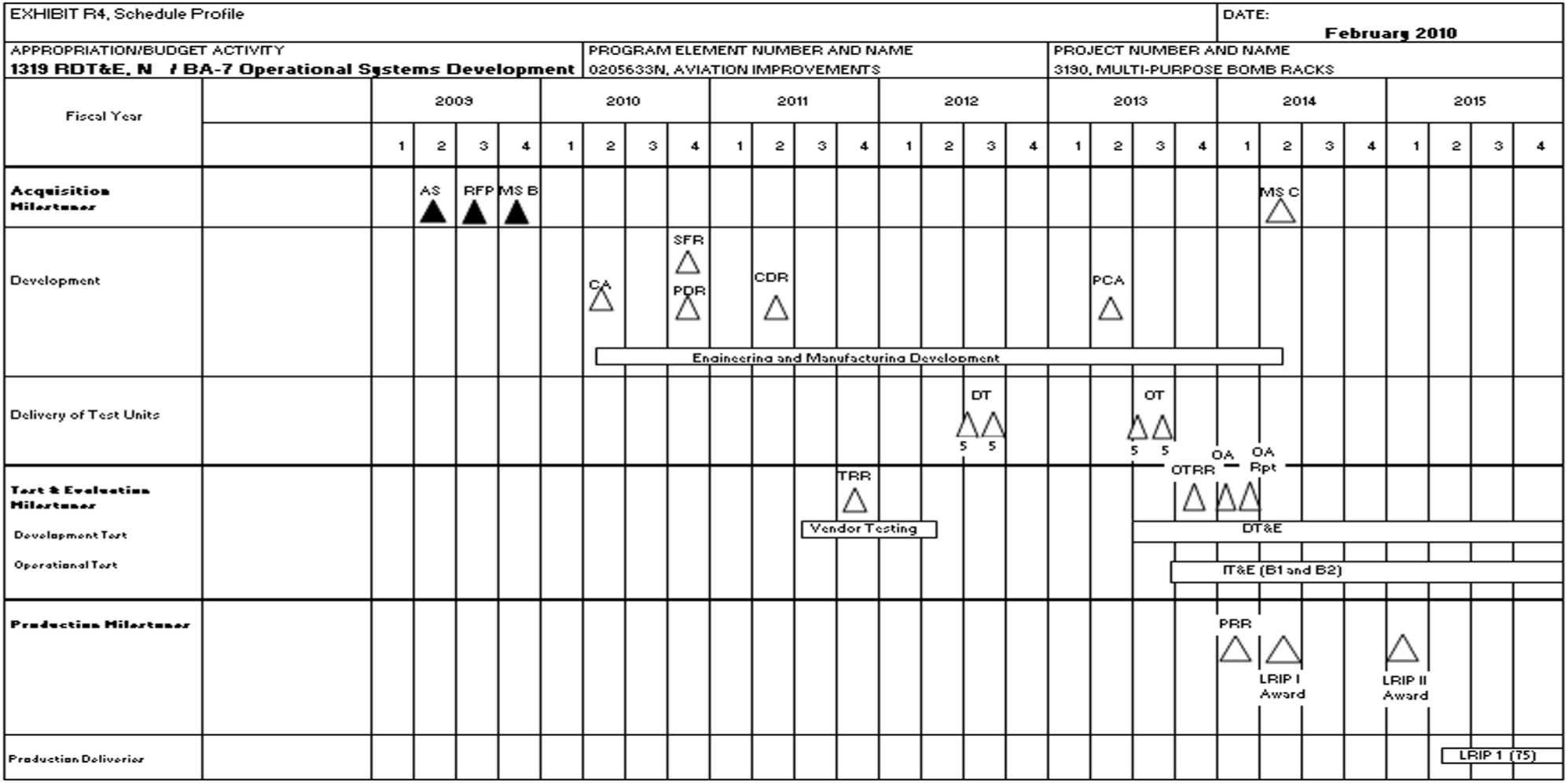

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	**R-1 ITEM NOMENCLATURE** PE 0205633N: *Aviation Improvements*	**PROJECT** 3190: *Multi-Purpose Bomb Racks*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Acquisition Strategy (AS)	2	2009	2	2009
Request For Proposal (RFP)	3	2009	3	2009
Milestone B	4	2009	4	2009
Contract Award	2	2010	2	2010
Development Phase - EMD	2	2010	2	2014
System Functional Review	4	2010	4	2010
Preliminary Design Review (PDR)	4	2010	4	2010
Critical Design Review (CDR)	2	2011	2	2011
Vendor Testing	3	2011	2	2012
Test Readiness Review (TRR)	4	2011	4	2011
Delivery of Test Assets (DT)	3	2012	3	2012
Developmental Test and Evaluation	3	2013	4	2015
Delivery of Test Assets (OT)	3	2013	3	2013
Integrated Test and Evaluation (IT&E)	4	2013	4	2015
Physical Configuration Audit (PCA)	2	2013	2	2013
Operational Test Readiness Review (OTRR)	4	2013	4	2013
Operational Assessment	1	2014	1	2014
OA Report	1	2014	1	2014

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
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	Start		End	
Event	Quarter	Year	Quarter	Year
Production Readiness Review	1	2014	1	2014
Milestone C (MS C) / LRIP Decision	2	2014	2	2014
LRIP 1 Award	2	2014	2	2014
LRIP 2 Award	1	2015	1	2015
LRIP 1 Delivery	2	2015	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
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COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: *Congressional Adds*	12.326	11.791	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	73.430
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Congressional Add

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: Highly Conductive Lightweight Aircraft Sealant *FY 2010 Plans:* Resolve the viscosity versus conductivity stalemate. Find ways to adjust viscosity or conductivity without adversely impacting the other. Resolve corrosion issues. Optimize processing and application methods.	0.000	0.956
Congressional Add: Laser Peening for P-3 Life Extension *FY 2010 Plans:* Funding will support technology development of processes to increase life expectancy of components, starting with the United States Navy's P-3 Orion fleet, thereby reducing maintenance costs and improving safety and reliability.	0.000	1.275
Congressional Add: ARC FAULT CIRCUIT BREAKER WITH ARC LOCATION SYSTEM	0.997	0.797

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
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B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
FY 2009 Accomplishments: Created inversion algorithm software to locate arc faults at distances closer than 10 feet. Performed blind/functional test. *FY 2010 Plans:* Continue FY09 efforts.		
Congressional Add: F/A 18 AVIONICS GROUND SUPPORT SYSTEM *FY 2009 Accomplishments:* Supports the F/A 18 Avionics Ground Support System.	2.393	0.000
Congressional Add: ROTOR BLADE PROTECTION *FY 2009 Accomplishments:* Characterized sand particles, flow fields, and commercially available polyurethanes. Initiated modeling of erosion mechanisms.	0.798	0.000
Congressional Add: Sacrificial Film Laminates For Navy Helicopter Win *FY 2009 Accomplishments:* Improved total light transmission. Improved hard-coat layer of the film with respect to aging. Improved humidity performance. Increased ease of successful installation.	0.957	0.000
Congressional Add: WIRELESS SENSORS FOR NAVY AIRCRAFT *FY 2009 Accomplishments:* Demonstrated critical elements in laboratory setting.	2.394	2.390

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 9999: *Congressional Adds*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
FY 2010 Plans: Proceed to limited system-level demonstration if full flight test is successful.		
Congressional Add: LIGHTWEIGHT COMPOSITE STRUCTURE DEV FOR AEROSPACE *FY 2009 Accomplishments:* Completed test plan and test panel manufacture. Panels were delivered. Manufactured component to demonstrate CH-53K cargo ramp. *FY 2010 Plans:* Continue FY09 efforts.	0.798	2.390
Congressional Add: RAPID REPAIR UV CURABLE STRUCTURAL ADHESIVES *FY 2009 Accomplishments:* Developed resin and repair procedures. Prepared samples for dielectric and mechanical tests.	2.393	0.000
Congressional Add: Vet-Biz Initiative for National Sustainment (VINS- *FY 2009 Accomplishments:* Developed operational plan. Formed government team. Initiated pilot program for initial parts run-through and process prototyping. *FY 2010 Plans:* Continue FY09 efforts.	1.596	3.983
Congressional Adds Subtotals	12.326	11.791

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 7: *Operational Systems Development*	R-1 ITEM NOMENCLATURE PE 0205633N: *Aviation Improvements*	PROJECT 9999: *Congressional Adds*

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

Not required for Congressional Adds

E. Performance Metrics

Not required for Congressional Adds