Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*							
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	10.271	18.918	30.403	0.000	30.403	33.750	34.378	29.830	27.473	Continuing	Continuing
0829: *ENERGY CONSERVATION (ADV)*	3.907	3.944	19.579	0.000	19.579	21.645	23.854	25.165	23.065	Continuing	Continuing
0838: *Mobility Fuels (ADV)*	1.676	4.497	10.824	0.000	10.824	12.105	10.524	4.665	4.408	Continuing	Continuing
9999: *Congressional Adds*	4.688	10.477	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.593

A. Mission Description and Budget Item Justification

This program supports projects to evaluate, adapt, and demonstrate energy related technologies for Navy aircraft and ship operations to: (a) increase fuel-related weapons systems capabilities such as range and time on station; (b) reduce energy costs; (c) apply energy technologies that improve environmental compliance; (d) relax restrictive fuel specification requirements to reduce cost and increase availability worldwide; (e) provide guidance to fleet operators for the safe use of commercial grade or off-specification fuels when military specification fuels are unavailable or in short supply; and (f) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems. This program supports the achievement of legislated, White house, Department of Defense, and Navy Energy Management Goals. It also responds to direction from the Office of the Secretary of Defense, the Secretary of the Navy, and the Chief of Naval Operations to make up-front investment in technologies that reduce future cost of operation and ownership of the fleet and supporting infrastructure.

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	10.263	8.476	0.000	0.000	0.000
Current President's Budget	10.271	18.918	30.403	0.000	30.403
Total Adjustments	0.008	10.442	30.403	0.000	30.403
• Congressional General Reductions		-0.078			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		10.520			
• Congressional Directed Transfers		0.000			
• Reprogrammings	0.041	0.000			
• SBIR/STTR Transfer	-0.033	0.000			
• Program Adjustments	0.000	0.000	30.403	0.000	30.403

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603724N: *Navy Energy Program*

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *Alt and Renew Energy Prog - Cong*	0.000	2.988
Congressional Add: *Solar Heat Reflective Film for Energy Efficiency*	0.000	3.904
Congressional Add: *Hydrogen Fuel Cell Development*	1.197	0.000
Congressional Add: *Molten Carbonate Fuel Cell Demonstrator*	3.491	3.585
Congressional Add Subtotals for Project: 9999	4.688	10.477
Congressional Add Totals for all Projects	4.688	10.477

Change Summary Explanation
Technical: Not applicable.
Schedule: 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 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*	

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
0829: *ENERGY CONSERVATION (ADV)*	3.907	3.944	19.579	0.000	19.579	21.645	23.854	25.165	23.065	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The Energy Conservation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This Fleet driven project will identify mature potential energy saving and maintenance improvement areas, by involvement with Life-Cycle Managers (LCMs), Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEO, and the Top Management Attention/Top Management Issue (TMA/TMI) community. Potential technology target areas will include: Hull Hydrodynamics, Hull Husbandry, Heating, Ventilation & Air Conditioning (HVAC) Systems, Thermal Management, Propulsion Systems, Electrical Systems, and Power Generation and Storage systems and Aircraft Energy Conservation. The project directly supports Fleet requirements to reduce energy consumption and lower maintenance costs. The project will focus on research and development across the following major areas: Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements. Hull Husbandry Sub Project - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both land based and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency. HVAC Sub Projects - Project funds will be utilized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements. Thermal Management Sub Project - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC. Propulsion Systems Sub Project - Project funds will be utilized to identify requirements and perform land based and ship board testing of ship propulsion system improvements, on Gas Turbine and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. (SCD# 1801 - Online Waterwash System for Gas Turbine Motor/Gas Turbine Generator (GTM/GTG), SCD# 1808 Power Conservation Management) Electrical Systems Project - Project funds will be utilized to identify requirements and perform land based and ship board testing of ship electrical system improvements, to reduce overall fuel consumption and lower maintenance costs. (SCD# 1817 Variable Speed Drive VSD) for 1000 Gal. Firemain System, (SCD# 1818 VSD-IMP for 2000 Gal. Fire pumps) Power Generation & Storage System Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall effectiveness of these improvements. Project includes the development of high efficiency, small capacity HVAC compressor for DG83AF/ LPD17CL and evaluate engine, air vehicle technologies and operational modifications to assess potential benefits in approving aircraft fuel efficiencies.

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 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Power Generation and Storage Project	0.191	0.202	0.202	0.000	0.202
Power Generation & Storage System Sub Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements *FY 2009 Accomplishments:* Conducted investigations of various power generation and storage technologies available for shipboard installation. *FY 2010 Plans:* Develop Business Case Analyses on most promising Power Generation and Storage technologies identified and reviewed for shipboard installations. Continue to identify new fuel saving technologies in Power Generation & Storage. *FY 2011 Base Plans:* Conduct Land Based / Model testing , develop design, prepare Ship Change Document (SCD) for new fuel saving initiatives identified in Power Generation and storage technologies functional area. Continue to identify new fuel saving technologies in Power Generation & Storage.					
Hull Hydrodynamic Sub Project	0.988	1.025	1.200	0.000	1.200
Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall mission and cost effectiveness of these improvements. *FY 2009 Accomplishments:* Continued development of Stern Flap design for Landing Ship Dock (LSD) and Landing Helicopter Dock (LHD) class of ships, commenced installation of stern flaps on LSD 41 and LHD 3 for evaluation.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: Complete installation of Stern Flaps and commence test and evaluation, prepare report and update (SCD) for implementation. Continue to identify additional fuel saving measures in Hull Hydrodynamics. *FY 2011 Base Plans:* Conduct Land Based / Model testing, develop design, prepare SCD (s) for new fuel saving initiatives identified. Continue to identify additional fuel saving measures in Hull Hydrodynamics.					
Hull Husbandry Sub Project Hull Husbandry Sub Project - Project funds will be utilized to identify and evaluate new underwater hull coating systems and underwater hull cleaning and maintenance techniques both land based and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency. *FY 2009 Accomplishments:* Continued development of efforts to apply advanced coating to LSD ships and guided missile destroyers. Applied advanced coating to hull of USS PORT ROYAL and USS COLE and propellers of USS GUNSTON HALL . *FY 2010 Plans:* Continue shipboard test, and evaluation of coatings including diver inspections, evaluation of cleaning methods, development of cleaning procedures and measurement of effectiveness. Continue to identify new fuel saving initiatives in Hull Husbandry *FY 2011 Base Plans:* Develop Business Case Analysis based on test results of coating applications and continue development , test and evaluation of new fuel savings initiatives identified. Continue to identify new fuel saving initiatives in Hull Husbandry.	1.576	1.430	1.354	0.000	1.354

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
HVAC Sub Project	0.191	0.200	2.736	0.000	2.736
HVAC Sub Project - Project funds will be utilized to accomplish prototype development, land and shipboard testing to determine overall mission and cost effectiveness of these improvements. *FY 2009 Accomplishments:* Conducted research of improvements to Heating Ventilation Air Conditioning (HVAC) controls aimed at reducing shipboard electrical load and therefore energy demand. *FY 2010 Plans:* Develop Business Case Analyses on most promising HVAC identified controls technology reviewed for shipboard installations. Continue to identify additional fuel saving measures in HVAC. *FY 2011 Base Plans:* Complete testing of hi-efficiency, large capacity HVAC compressor project and includes increase to leverage technology to develop hi-efficiency, small capacity HVAC compressor for DG83AF/ LPD17CL. Continue to identify additional fuel saving measures in HVAC.					
Thermal Management Sub Project	0.191	0.200	0.220	0.000	0.220
Thermal Management Sub Project - Project funds will be utilized to identify and evaluate potential uses for Thermal Management techniques designed to reduce overall shipboard heat generation and reduce the overall need for HVAC. *FY 2009 Accomplishments:* Conducted research of improvements to Thermal Management Technologies aimed at reducing shipboard electrical load and therefore energy demand.					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2010 Plans: Develop Business Case Analyses on most promising Thermal Management technologies identified and reviewed for shipboard installations. Continue to identify additional fuel saving technologies in Thermal Management. *FY 2011 Base Plans:* Conduct Land Based/Model testing,develop design, prepare Ship Change Document (SCD) for new fuel saving initiatives identified in Thermal management technologies functional area. Continue to identify additional fuel saving technologies in Thermal Management.					
Propulsion Systems Sub Project Propulsion Systems Sub Project - Project funds will be utilized to identify, perform land based and ship board testing of ship propulsion system improvements, on Gas Turbine and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs. (SCD# 1801 - Online Waterwash System for GTM/GTG, SCD# 1808 Power Conservation Management). *FY 2009 Accomplishments:* Installed Online Water Wash (OLWW) system on USS PREBLE and commenced evaluation and test. *FY 2010 Plans:* Continue to evaluate performance of OLWW, report results and identify additional fuel saving measures in Propulsion Systems Functional area. Continue to identify additional fuel saving technologies in Propulsion Systems *FY 2011 Base Plans:* Conduct Land Based testing and shipboard installation and evaluation of new fuel saving initiatives identified. Continue to identify additional fuel saving technologies in Propulsion Systems.	0.450	0.513	0.550	0.000	0.550

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Electrical Systems SubProject	0.301	0.374	0.374	0.000	0.374
Electrical Systems SubProject-Project funds will be utilized to identify and perform land based and ship board testing of ship electrical system improvements to reduce energy. *FY 2009 Accomplishments:* Development of solid state lighting (SSL) technologies on landing ship dock (LSD) 41/49 Class to reduce overall electrical energy loads therefore energy demand. *FY 2010 Plans:* Complete installation of SSL Lighting prototypes in berthing, passageways and welldecks and commence test and evaluation, prepare report and update Ship Change Document (SCD) for implementation. Continue to identify new fuel saving technologies in Electrical Systems. *FY 2011 Base Plans:* Conduct Land Based/Model testing, develop design, prepare SCD(s) for new fuel saving initiatives identified in Electrical Systems. Continue to identify new fuel saving technologies in Electrical Systems.					
Aircraft Energy Conservation	0.000	0.000	12.943	0.000	12.943
Evaluate technologies to determine potential benifits in reducing fuel consumption. *FY 2011 Base Plans:* Initiate study to evaluate increase of F-18 carrier weight limits. Conduct studies to evaluate engine and air vechicle technologies and operational modifications to assess potential benifits in approving aircraft fuel efficiencies.					
DAWDF	0.019	0.000	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 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
FY 2009 Accomplishments: DAWDF Realignment					
Accomplishments/Planned Programs Subtotals	3.907	3.944	19.579	0.000	19.579

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

This is a non-acquisition program that develops, evaluates and validates mature technologies in support of Fleet fuel and maintenance savings.

E. Performance Metrics

Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in Barrels of Fuel saved based on ship demonstration testing.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

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	WR	NSWC Carderock Bethesda, MD	0.761	0.399	Oct 2009	1.060	Oct 2010	0.000		1.060	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC Carderock Bethesda, MD	0.756	0.403	Nov 2009	0.673	Nov 2010	0.000		0.673	Continuing	Continuing	Continuing
Engineering Development 1	WR	NSWC Carderock Bethesda, MD	1.422	0.757	Dec 2009	1.055	Dec 2010	0.000		1.055	Continuing	Continuing	Continuing
Engineering Development 2	WR	NSWC Carderock Bethesda, MD	1.472	0.786	May 2010	1.087	May 2011	0.000		1.087	Continuing	Continuing	Continuing
Engineering Development	Various/ Various	TBD TBD	0.000	0.000		11.050	Jul 2011	0.000		11.050	Continuing	Continuing	Continuing
		Subtotal	4.411	2.345		14.925		0.000		14.925			

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
Developmental Test and Evaluation	WR	NSWC Carderock Bethesda, MD	1.530	0.785	Nov 2009	1.198	Mar 2011	0.000		1.198	Continuing	Continuing	Continuing
Operational Test and Evaluation	WR	NSWC Carderock Bethesda, MD	0.382	0.201	Nov 2009	0.898	Dec 2010	0.000		0.898	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 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

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
Live Fire Test and Evaluation	WR	NSWC Carderock Bethesda, MD	0.382	0.210	Mar 2010	0.000		0.000		0.000	Continuing	Continuing	Continuing
		Subtotal	2.294	1.196		2.096		0.000		2.096			

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
Program Management Support	WR	NSWC Carderock Bethesda, MD	0.536	0.283	Oct 2009	0.506	Oct 2010	0.000		0.506	Continuing	Continuing	Continuing
Program Management Support	WR	NAWCAD PAX Patuxent River, MD	0.000	0.000		1.909	Jan 2011	0.000		1.909	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA HQ Dahlgren, VA	0.076	0.041	Jul 2010	0.043	Feb 2011	0.000		0.043	Continuing	Continuing	Continuing
Test Assets	WR	NSWC Carderock Bethesda, MD	0.152	0.079	Mar 2010	0.100	Mar 2011	0.000		0.100	Continuing	Continuing	Continuing
DAWDF	C/FP	Not Specified Not Specified	0.019	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
		Subtotal	0.783	0.403		2.558		0.000		2.558			

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0829: *ENERGY CONSERVATION (ADV)*

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

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	7.488	3.944		19.579		0.000		19.579			

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603724N: *Navy Energy Program*	**PROJECT** 0829: *ENERGY CONSERVATION (ADV)*

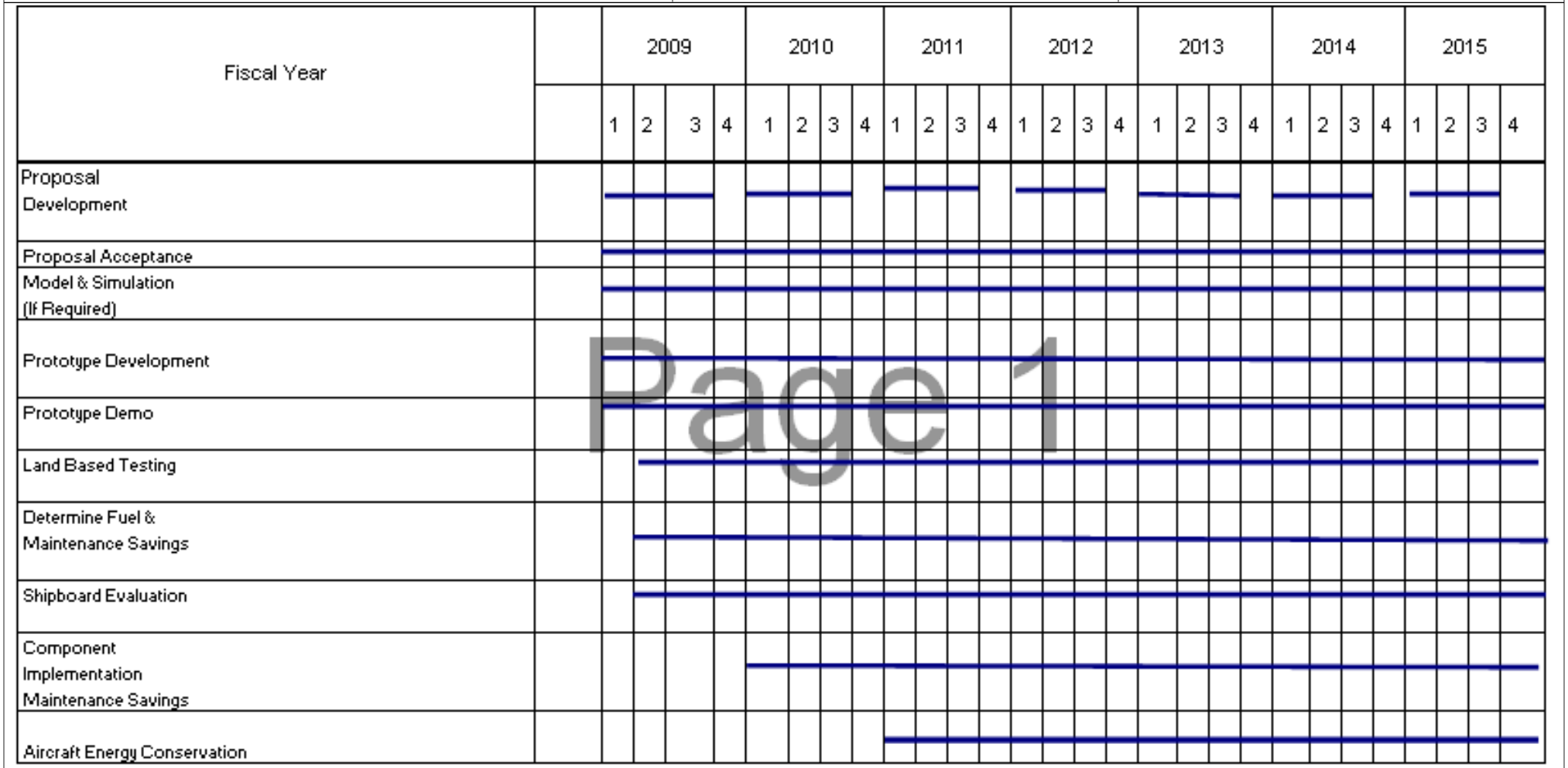

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603724N: *Navy Energy Program*	**PROJECT** 0829: *ENERGY CONSERVATION (ADV)*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Proposal Development 1	1	2009	3	2009
Proposal Development 2	1	2010	3	2010
Proposal Development 3	1	2011	3	2011
Proposal Development 4	1	2012	3	2012
Proposal Development 5	1	2013	3	2013
Proposal Development 6	1	2014	3	2014
Proposal Development 7	1	2015	3	2015
Proposal Acceptance	1	2009	4	2015
Modeling and Simulation	1	2009	4	2015
Prototype Development	1	2009	4	2015
Prototype Demonstration	1	2009	4	2015
Land-Based Testing	2	2009	4	2015
Determine Fuel and Maintenance Savings	2	2009	4	2015
Shipboard Evaluation	2	2009	4	2015
Component Implementation Maintenance Savings	1	2010	4	2015
Aircraft Energy Conservation	1	2011	3	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0838: *Mobility Fuels (ADV)*	

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
0838: *Mobility Fuels (ADV)*	1.676	4.497	10.824	0.000	10.824	12.105	10.524	4.665	4.408	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

This project provides data through laboratory, component, engine and fuel system tests which relate the effects of changes in Navy fuel procurement specification properties and chemistries to the performance and reliability of Naval ship and aircraft engine and fuel systems. This information is required to: (a) develop, validate and execute the test protocols necessary to approve fuels derived from non-petroleum feedstocks; (b) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; (c) provide guidance to fleet operators for the safe use of off-specification or commercial grade fuels when military specification fuels are unavailable or in short supply; (d) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in fuel supply industry and (e) improve the capability to provide fuel quality surveillance in the field. Continued volatility and rapid escalation of the cost of fuel has placed additional pressures on the Navy budgets responsible for maintaining and sustaining the Navy tactical fleet both now and in the future. These pressures have placed an added emphasis on the potential utilization of lower cost commercial fuels and/or fuels derived from non-petroleum sources as a potential means of stabilizing the current and anticipated price volatility. Recent problems with petroleum based fuel quality have demonstrated the adverse affects fuel related problems can have on ship and aircraft system performance, reliability and readiness. While the impacts on readiness, additional maintenance costs, and the cost of lost equipment are often difficult to fully quantify they are often many times the cost of this program. This potential risk of fuel related problems over the next decade, given the unknowns of supply, feedstocks, environmental regulations and the introduction of new theaters of operation will continue to increase. This project represents the only investment designed to maintain the Navy's ability to operate as a "smart" customer for fuels that cost over $4.0 B per year for procurement, transport, storage and consumption and are essential to fleet operations.

The increase in project 0838 in PE 0603724N from FY10 to FY11 is to support the Navy's effort to test and certify alternative fuels for Navy ship and aircraft utilization. The increased funding is for procurement of test fuel and to conduct the large scale engine and system tests required to approve alternative fuel candidates for inclusion into the Navy's JP-5 and F-75 specifications. ARRA funding was provided to accelerate the development of the test requirements and to validate them using the F-18 as the lead the fleet test vehicle. The funding provided in project 0838 in PE 0603724N is to expand the ARRA sponsored efforts across additional aircraft and ship systems.

This funding is the Navy's only investment in the approval of alternative fuels for tactical applications and directly supports the Navy energy goals of increased energy security and environmental stewardship.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0838: *Mobility Fuels (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Aircraft Fuels	0.848	2.247	4.313	0.000	4.313
Perform development, test and evaluation work on Naval aircraft fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance and approval to fleet operators for the safe use of military aircraft that include new additives or are derived from non-petroleum sources ; c) make needed periodic changes to the fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry and d) improve fleet methods to ensure fuel quality. *FY 2009 Accomplishments:* Continue development of equipment/fuel qualification protocol to evaluate and approve alternative fuels. Continue development and test prototype of multi-property shipboard-based sensors and instruments to rapidly determine critical jet fuel properties. *FY 2010 Plans:* Complete development of Navy qualification protocol to evaluate and approve alternative fuels. Transition multi-property shipboard-based sensors and instruments to rapidly determine critical jet fuel properties. Initiate development dual compatible (ship and aircraft) lubricity improving additive. *FY 2011 Base Plans:* Down select initial alternative fuel candidate and initiate testing to validate protocol. Continue development of dual compatible (ship and aircraft) lubricity improving additive.					
Ship Fuels	0.820	2.250	6.511	0.000	6.511
Performs development, test and evaluation work on Naval ship propulsion fuels to: a) determine the extent to which unnecessarily restrictive specification features can be relaxed to reduce cost and increase availability worldwide; b) provide guidance to fleet operators for the safe use of off-					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0838: *Mobility Fuels (ADV)*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
specification or commercial grade fuels when military fuels are unavailable or in limited supply; and c) make needed periodic changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in the fuel supply industry including fuel derived from non-petroleum sources. *FY 2009 Accomplishments:* Continue development of a qualification procedure to evaluate and approve utilization of synthetic and ultra-clean, low sulfur ship fuels. Complete development of shipboard-based sensors and instruments to rapidly determine critical ship fuel properties. Continue review of the F-76 ship distillate fuel specification and test requirements evaluation to remove any unnecessary requirements to increase availability. *FY 2010 Plans:* Continue development of Navy protocol to evaluate and approve alternative fuels. Test shipboard-based sensors to rapidly determine critical fuel properties. Initiate development dual compatible (ship and aircraft) lubricity improving additive. *FY 2011 Base Plans:* Complete development of Navy protocol to evaluate and approve alternative fuels. Down select initial alternative fuel candidate and initiate validation of evaluation and approval protocol. Transition shipboard sensor(s) to rapidly determine critical fuel properties. Continue development of dual compatible (ship and aircraft) lubricity improving additive.					
DAWDF *FY 2009 Accomplishments:* DAWDF Realignment	0.008	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	1.676	4.497	10.824	0.000	10.824

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

Alternative Fuel Efforts including testing and fuel procurement efforts in FY10-13 will be competitively contracted, and performed under Cost Plus Fixed Fee (CPFF) and Firm Fixed Price (FFP) contracts.

E. Performance Metrics

Program will develop Alternate Fuel test and certification protocols for 100% of all Naval aircraft and ships. Program will evaluate biofuels, biofuel chemistry and components tests as defined in test and certification protocols.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0838: *Mobility Fuels (ADV)*	

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
Systems Engineering	WR	NRL Washington, D.C.	0.625	0.200	Feb 2010	0.200	Nov 2010	0.000		0.200	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD Patuxent River, MD	3.657	0.800	Nov 2009	0.800	Nov 2010	0.000		0.800	Continuing	Continuing	Continuing
Engineering Development	Various/ TBD	TBD TBD	0.000	0.000		2.201	Feb 2011	0.000		2.201	Continuing	Continuing	Continuing
		Subtotal	4.282	1.000		3.201		0.000		3.201			

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
Developmental Test & Evaluation	Various/ Various	Various Various	2.816	1.894	Feb 2011	6.001	Jan 2012	0.000		6.001	Continuing	Continuing	Continuing
Developmental Test & Evaluation	MIPR	Army Tank/Arm Warren, MN	0.228	0.000		0.000		0.000		0.000	0.000	0.228	-0.001
		Subtotal	3.044	1.894		6.001		0.000		6.001			

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 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 0838: *Mobility Fuels (ADV)*

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
Program Management Support	Various/ Various	Various Various	2.620	1.603	Mar 2011	1.622	Jan 2012	0.000		1.622	Continuing	Continuing	Continuing
Program Management Support	MIPR	SRI San Antonio, TX	0.696	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing
Program Management Support	WR	NAVSEA Washington, DC	0.100	0.000		0.000		0.000		0.000	0.000	0.100	-0.001
Program Management Support	WR	NSWC Philadelphia, PA	0.088	0.000		0.000		0.000		0.000	0.000	0.088	-0.001
DAWDF Realignment Issue 74408	Various/ TBD	Not Specified Not Specified	0.008	0.000		0.000		0.000		0.000	0.000	0.008	-0.001
		Subtotal	3.512	1.603		1.622		0.000		1.622			

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	10.838	4.497		10.824		0.000		10.824			

Remarks

Exhibit R-4, **RDT&E Schedule Profile:** PB 2011 Navy		**DATE:** February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603724N: *Navy Energy Program*	**PROJECT** 0838: *Mobility Fuels (ADV)*

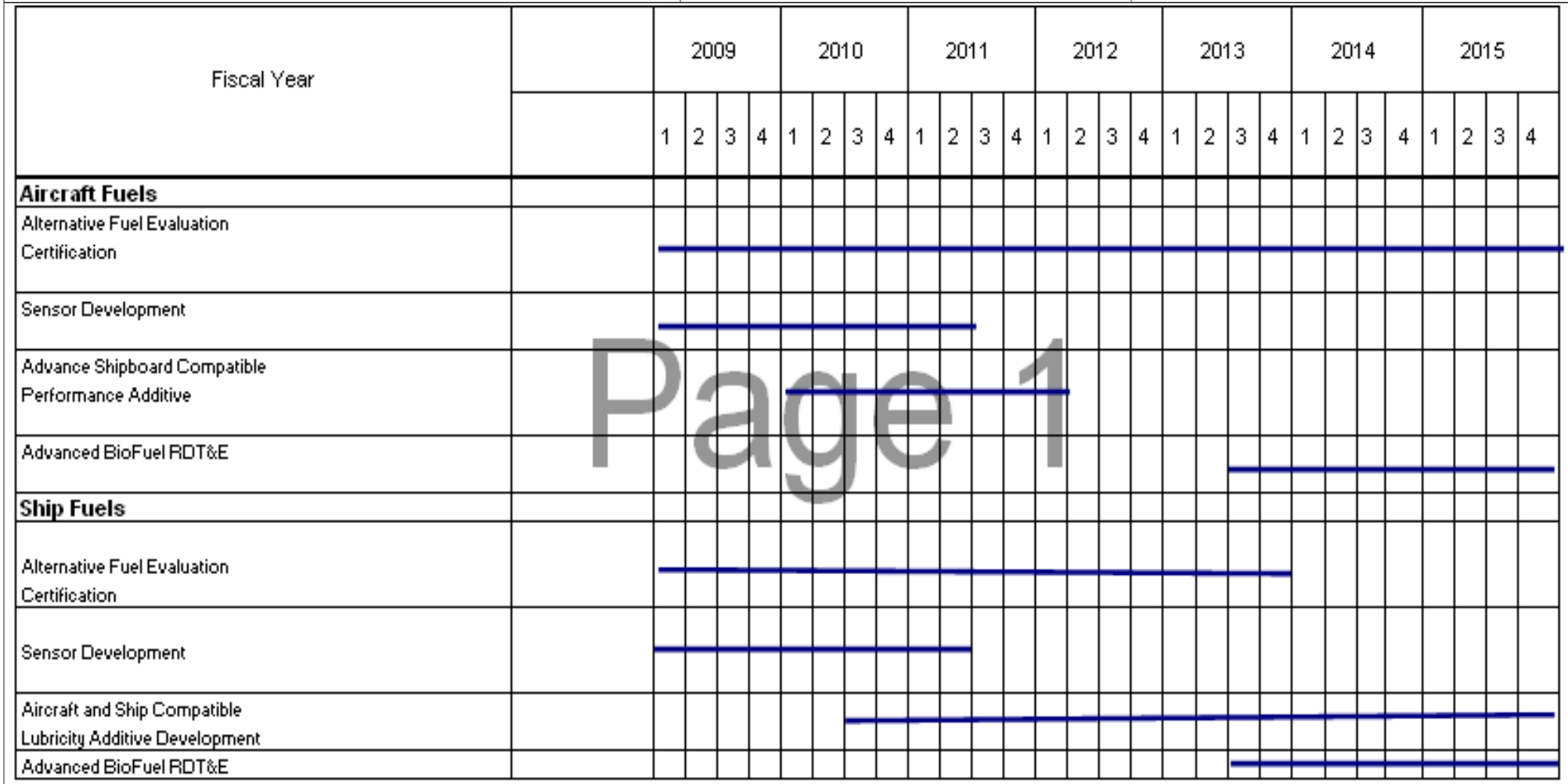

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603724N: *Navy Energy Program*	**PROJECT** 0838: *Mobility Fuels (ADV)*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
Aircraft Fuels Alternate Fuel Evaluation/Certification	1	2009	4	2015
Aircraft Fuels Sensor Development	1	2009	2	2011
Aircraft Fuels Advance Shipboard Compatible Performance Additive	1	2010	1	2012
Aircraft Fuels Advanced BioFuel RDT&E	3	2013	4	2015
Ship Fuels Alternate Fuel Evaluation/Certification	1	2009	4	2013
Ship Fuels Sensor Development	1	2009	2	2011
Ship Fuels Aircraft and Ship Compatible Lubricity Additive Development	3	2010	4	2015
Ship Fuels Advanced BioFuel RDT&E	3	2013	4	2015

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603724N: *Navy Energy Program*	PROJECT 9999: *Congressional Adds*	

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*	4.688	10.477	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	22.593
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: Alt and Renew Energy Prog - Cong *FY 2010 Plans:* Initiate study to evaluate increase of F-18 carrier weight limits.	0.000	2.988
Congressional Add: Solar Heat Reflective Film for Energy Efficiency *FY 2010 Plans:* Initiate development of Solar Reflective Film for vehicles and buildings. The project will develop and commercialize an advanced form of 3M Solar Reflective Film to help the US Military to improve the energy efficiency of all its facilities throughout the world by decreasing the size and weight of climate control and exterior components for vehicles and buildings.	0.000	3.904
Congressional Add: Hydrogen Fuel Cell Development	1.197	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 2009 Accomplishments: The Hydrogen Fuel Cell Development project will transfer a microfiber fuel cell technology's manufacturing process from a research and development level to a manufacturing environment and evaluate various parameters including production speed and product quality. Development and scale up of extrustion process to verify high speed production capability. Optimization of current Unicell production processes to meet manufacturing level production of extrusion process. Optimization and scale-up of fuel cell system production processes.		
Congressional Add: Molten Carbonate Fuel Cell Demonstrator *FY 2009 Accomplishments:* The key performance objective is to manufacture, install, commission, operate and maintain a 300 kilowatt (KW) MCFC power system at Submarine Base, located at Groton, CT. Selected operational parameters will be monitored, recorded, analyzed, and reported over a time period of 36 months. *FY 2010 Plans:* The Government will exercise an option or options to increase the installed capacity of the MCFC power system from 300 kilowatt to a maximum 1.4 megawatt (MW).	3.491	3.585
Congressional Adds Subtotals	4.688	10.477

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

Congressional Add