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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Navy **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>					R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	53.241	69.844	55.324	45.618	-	45.618	93.836	60.857	53.013	53.913	Continuing	Continuing
0829.: <i>ENERGY CONSERVATION (ADV)</i>	14.108	17.069	8.770	7.695	-	7.695	14.011	14.831	13.795	14.043	Continuing	Continuing
0838: <i>Mobility Fuels (ADV)</i>	25.729	15.749	11.071	7.649	-	7.649	18.975	14.956	12.219	12.427	Continuing	Continuing
0928: <i>Directed Energy Research</i>	13.404	13.404	16.243	1.870	-	1.870	8.627	3.603	2.860	2.892	Continuing	Continuing
0996: <i>Aircraft Energy Conservation</i>	0.000	23.622	19.240	28.404	-	28.404	52.223	27.467	24.139	24.551	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

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.

Project 0996 funding and efforts were realigned from project 0929 in FY 2012.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
1319: Research, Development, Test & Evaluation, Navy		PE 0603724N: Navy Energy Program			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	70.538	55.324	80.467	-	80.467
Current President's Budget	69.844	55.324	45.618	-	45.618
Total Adjustments	-0.694	0.000	-34.849	-	-34.849
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.694	0.000			
• Program Adjustments	0.000	0.000	-12.523	-	-12.523
• Rate/Misc Adjustments	0.000	0.000	-22.326	-	-22.326
Change Summary Explanation					
Technical: Not applicable.					
Schedule:					
0829 - Land Based Testing, Determine Fuel and Maintenance Saving, Shipboard Evaluation and Component Implementation schedules have all been delayed due to prototype development.					
0838 - Generation 3 Protocol Development added to ensure incorporation of efforts on Office of Naval Research fuels science and technology program, for which a deliverable is development of advance tools to improve the alternative fuels test and certification process. Access to technology transition dates was unavailable during the last budget cycle. 50% Bio Derived Lab/Hardware Testing and 50% Bio Derived Ship/Aircraft Demonstrations will be extended because of FY14 budget cut. Hardware testing will be delayed into early FY15, and ship/aircraft demonstrations will be funded in FY15 and FY16.					
0929- Air ENCON Program realigned to 0996 starting 1Qtr 2012- 4Qtr 2018. Air Vehicle Energy Efficiency realigned to 0996 starting 1Qtr 2012 - 4Qtr 2018. Engine Efficiency realigned to 0996 starting in 1Qtr 2012 - 4Qtr 2018. Mission Planning Module Upgrades realigned to 0996 starting in 1Qtr 2012 - 4Qtr 2016.					
0996 - Aircraft Energy Conservation item deleted; it was over-arching and not representative of individual efforts. Aircraft Drag Reducing item deleted; testing completed in FY12. Completed microsmooth aircraft coating wind tunnel performance evaluations showed that, despite predictions and commercial data presented prior to testing, there was only a minimal benefit to reducing fuel burn and therefore the project will be terminated in FY12. F/A-18 Bring-Back Weight Study item deleted; additional analysis showed that this effort would not meet fuel reduction goals as previously projected during project inception and was therefore not cost-effective to continue.					

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APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE				PROJECT			
1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)					PE 0603724N: Navy Energy Program				0829.: ENERGY CONSERVATION (ADV)			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0829.: ENERGY CONSERVATION (ADV)	14.108	17.069	8.770	7.695	-	7.695	14.011	14.831	13.795	14.043	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

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. The aircraft energy conservation project identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the project is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Energy Conversation Advanced Project is designed to develop and implement energy and maintenance saving improvements into existing Fleet assets. This Fleet driven project, managed through NAVSEA 05Z, will identify mature potential energy saving and maintenance improvement areas, by involvement with Life-Cycle Managers (LCMs), NAVSEA Technical Warrant Holders, In-Service Engineering Agents (ISEAs), PEOs, TMA/TMI, Industry, and Academia. 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. 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: (U) Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers and/or hull appendages to determine overall mission and cost effectiveness of these improvements. (U) 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 landbased and shipboard to reduce hydrodynamic drag on the hull and thereby increase fuel efficiency. (U) 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. (U) 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. (U) Propulsion Systems Sub Project - Project funds will be utilized to identify requirements and perform landbased and ship board testing of ship propulsion system improvements, on Gas Turbine, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs and to develop a ship-wide monitoring system capable of conveying the power usage and operating conditions of numerous systems on the ship (U) Electrical Systems Project - Project funds will be utilized to identify requirements and perform landbased and ship board testing of ship electrical system improvements, to reduce overall fuel consumption and lower maintenance costs. (U) Power Generation & Storage System Project - This project area will accomplish prototype development, laboratory and Fleet testing to determine overall effectiveness of these improvements. (U) Smart Voyage Planning (SVPDA)/ Fleet Scheduler - Analytic software tools for shore-side planning (1) to design ship voyage routes that minimize fuel usage using ship fuel curves, local weather, and ocean-current data, and (2) allow Fleet schedulers to develop mission plans for movement of Ships using minimized fuel usage as a primary focus, while (3) accounting for personnel and ship safety.

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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 Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
Title: Power Generation and Storage Project		2.119	1.854	0.925
Articles:		0	0	0
Description: 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 2012 Accomplishments: Commenced Land Based testing of Energy Storage Module (ESM), developed test specs and procedures for shipboard installation of a 600KW Energy Storage Module (ESM) on a DDG 51 ship (hull to be determined (1-6 month evaluation)) to demonstrate Single Generator Operations. Continuing to identify new fuel saving technologies in Power Generation & Storage including technical assessment of more efficient operation of Ship Service Diesel Engine Generators (SSDGs).				
FY 2013 Plans: Continue land based testing and install ESM Proof of Concept on ship for demonstration. Remove shipboard ESM test unit from ship, analyze performance data, continue any additional land based testing required and prepare reports.. Continue to identify new fuel saving technologies in Power Generation & Storage for Gas Turbine, Diesel and Steam ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.				
FY 2014 Plans: Continue to identify new fuel saving technologies in Power Generation & Storage for Gas Turbine, Diesel and Steam ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.				
Title: Hull Hydrodynamic Sub Project		2.800	1.000	1.725
Articles:		0	0	0
Description: (U) Hull Hydrodynamic Sub Project - This project area will accomplish prototype development, modeling, laboratory and Fleet testing of ship modifications to propellers and/or hull appendages to determine overall mission and cost effectiveness of these improvements.				
FY 2012 Accomplishments: Continued advance planning efforts for installation of fins on LHD 1 Class ship during Dry-docking availability, initiated material procurement and fabrication, install fins during scheduled availability (SEPT 2012). Initiated engineering development efforts to install a bow bulb on DDG 51 class ship for evaluation to reduce fuel consumption. Conducted model testing of bow bulb design and reviewing existing data available based on earlier designs. Identified additional fuel saving technologies in Hull Hydrodynamic				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
systems for all ship classes and prepared proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. FY 2013 Plans: Complete model testing on bow bulb design; identify ship, prepare drawings and Ship Change documents as required for installation of Proof of concept on a DDG Hull. Continue to identify additional fuel saving technologies in Hull Hydrodynamic systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. FY 2014 Plans: Install bow bulb on selected DDG 51 class ship for test and evaluation, conduct pre and post sea trials to capture baseline and post performance data, prepare report of trial results. Continue to identify additional fuel saving technologies in Hull Hydrodynamic systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.				
Title: Hull Husbandry Sub Project Articles: Description: (U) 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 2012 Accomplishments: Continued to utilize Ship Powering Condition Monitor (SPCM) to evaluate coating performance and energy savings. Develop Business Case Analysis for easy release hull coating 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. FY 2013 Plans: Develop approaches to monitor performance of hull and propeller coatings with focus on determining when ships are operating in a fuel penalty condition due to hull or propeller roughness conditions. Continue to identify new fuel saving initiatives in Hull Husbandry and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. FY 2014 Plans:		0.625 0	0.504 0	0.994 0

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
Conduct model testing as required and ship installation for test and evaluation of identified hull/propeller modifications or monitoring approaches with objective to measure fuel savings. Continue to identify new fuel saving initiatives in Hull Husbandry and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.				
Title: Heating , Ventilation and Air Conditioning (HVAC) Sub Project Articles:		1.350 0	1.605 0	0.791 0
Description: (U) 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 2012 Accomplishments: IAW NAVSEA PPD 802-8417916, continued design and fabrication of the HES-C prototype chiller. The fabrication of major compressor and motor castings was completed. Design and fabrication of the compressor impellers and variable geometry diffusers was completed. Chiller Operator Interface Terminal and Programmable Logic Controller were developed and testing/ debugging commenced. Commenced component level testing of the permanent magnet motor and magnetic bearings. Technical challenges with rotor position sensor laminations were successfully resolved but resulted in an 8-week project delay. Technology implementation on DDG51FLT-IIa; DDG51FLT-III; LPD-26/27 and OHIO Replacement continued. HES-C is the baseline for the DDG51FLT-III. Performance & acoustic testing as well as Electro-magnetic Interference (EMI) testing commenced. Continuing efforts to install centrally controlled HVAC system utilizing programmable digital thermostats on a DDG Class hull and preparing proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel. FY 2013 Plans: Continue installation, test and evaluation of new HVAC system on a DDG CI hull, monitor performance and prepare report of savings. Evaluate Heating Ventilation and Air Conditioning systems of other classes of ships for efficiencies and installation of new digital thermostats for test and evaluation aimed at reducing ships energy consumption. Continue to identify additional fuel saving technologies in HVAC Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel. FY 2014 Plans: Based on evaluation of other classes of ships in FY13 perform technical assessment to develop test and installation plan for appropriate ship classes for improvement to shipboard HVAC systems. Review Business Case Analyses and develop test and installation plans as appropriate to perform land based and shipboard evaluation. Continue to identify additional fuel saving technologies in HVAC Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel.				
Title: Thermal Management Sub Project Articles:		0.100 0	0.100 0	0.100 0

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
Description: (U) 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 2012 Accomplishments: Performed engineering analyses to identify potential Thermal Management energy saving technologies applicable to navy ships. FY 2013 Plans: Continue to identify additional fuel saving technologies in Thermal Management that may be applicable to navy ships. Examine potential improvements to thermal properties of topside and non-skid coatings with aim of increasing heat reflective properties and reducing ships internal space temperatures. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption. FY 2014 Plans: Pursue lab and shipboard testing of identified thermal management technologies. Continue to identify additional fuel saving technologies in Thermal Management that may be applicable to navy ships. Prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel consumption.				
Title: Propulsion Systems Sub Project Articles: Description: (U) 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, Steam, and Diesel Engine systems to reduce overall fuel consumption and lower maintenance costs and to develop a ship-wide monitoring system capable of conveying the fuel usage and operating conditions of numerous systems on the ship. FY 2012 Accomplishments: Continued to assess technical merits of improvements to Gas Turbine, Steam and Diesel engine systems and development of Shipboard Energy Dashboard (SED) that captures existing shipboard equipment information related to fuel and electric power consumption for viewing on-board ship. SED is installed on 6 DDG 51 Class hulls for test and evaluation and is capturing fuel consumption data for man engines with monthly energy reports prepared for each ship. FY 2013 Plans: Evaluate performance of SED for main engines and modify/expand information being captured and displayed based on feedback from ships and other stakeholders. Expand SED development to other classes of ships based on their configuration and examination of information available. Determine actions necessary to deploy an energy dashboard for these classes of ships based on data available or needed and prepare necessary documentation to conduct shipboard test and evaluation. Continue		4.500 0	3.070 0	1.400 0

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2012	FY 2013	FY 2014
to identify additional fuel saving technologies in Propulsion Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel.					
FY 2014 Plans: Based on engineering analyses in FY13 of SED and determination of actions for other classes of ships develop plan of action to test and evaluate SED on at least one ship of each identified class of ships. Develop necessary documentation for installation and test of SED based on ships' availability. Monitor performance and prepare reports to evaluate effectiveness in providing ships force with actionable data to operate ships in energy efficient manner based on mission requirements.					
Title: Electrical Systems SubProject			2.175	0.637	1.760
Articles:			0	0	0
Description: Electrical Systems Sub Project - Project funds will be utilized to identify and perform landbased and shipboard testing of ship electrical system improvements to reduce energy.					
FY 2012 Accomplishments: Procured material and replaced legacy incandescent and fluorescent lighting with Solid State Light Emitting Diode (LED) technology for evaluation on a DDG-51 Class hull. Conducting engineering analysis and design for using Variable Speed Drive (VSD) technology in the Collective Protection System (CPS) of a DDG Class hull for test and evaluation. Developed the electric plant portion of the Shipboard Energy Dashboard installed on 6 DDG 51 Class hulls for test and evaluation to capture and display for ship's force the ship's energy posture of electric plant use. Continued to identify new fuel saving technologies in Electrical Systems.					
FY 2013 Plans: Prepare necessary documentation for land and shipboard testing and evaluation of FY12 initiatives (VSD/CPS, SED). Install VSD/CPS on a DDG 51 class hull and monitor performance. Evaluate performance of SED for ship's electric plant data and modify/expand information being captured and displayed based on feedback from ships force and other stakeholders. Expand SED development to other classes of ships based on their configuration and examination of information available. As with propulsion data, determine actions necessary for to deploy an energy dashboard for these classes of ships based on electric plant data available or needed and prepare necessary documentation to conduct shipboard test and evaluation. Continue to identify additional fuel saving technologies in Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel.					
FY 2014 Plans: Monitor performance of installed electric plant initiatives, analyze data and prepare reports. Continue SED efforts to monitor and display energy consumption data to ship's force personnel for fossil fuel ships, identify additional fuel saving technologies in					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2012	FY 2013	FY 2014
Electrical Systems and prepare proposals and Business Case Analyses for promising technologies with potential to reduce fossil fuel.			
Title: Smart Voyage Planning Decision (SVPDA) Articles: Description: Provide tools to allow ship voyage planning. FY 2012 Accomplishments: Awarded contract for development of additional capability to shore-side ship routing process (1) develop and design ship voyage routes that maximize fuel efficiency by incorporating ship configuration and performance data, local weather, and ocean-current data, and (2) allow Fleet Weather Center ship routers to develop mission plans for movement of Ships adding fuel efficiency as a primary focus, while (3) accounting for ship, crew and navigational safety (including weather avoidance). System deployed during Fleet RIMPAC (Rim of the Pacific)exercises in July 12 for evaluation.	3.400 0	0.000	0.000
Accomplishments/Planned Programs Subtotals	17.069	8.770	7.695

C. Other Program Funding Summary (\$ in Millions) N/A
Remarks
D. Acquisition Strategy This is a non-acquisition program that develops, evaluates, and validates mature technologies in support of Fleet fuel and maintenance savings. RDT&E Contracts are Competitive Procurements.
E. Performance Metrics Actual performance of energy conservation initiatives are measured against initially projected fuel savings measured in barrels of fuel saved based on aircraft and ship demonstration testing. Quarterly Program Reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	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	1.887	2.507	Oct 2011	1.200	Nov 2012	0.600	Nov 2013	-		0.600	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC Carderock:Bethesda, MD	1.439	1.756	Oct 2011	1.070	Nov 2012	0.896	Nov 2013	-		0.896	Continuing	Continuing	Continuing
Engineering Development	WR	NSWC Carderock:Bethesda, MD	2.404	1.955	Nov 2011	1.200	Nov 2012	0.600	Nov 2013	-		0.600	Continuing	Continuing	Continuing
Demonstration & Evaluation	WR	NSWC Carderock:Bethesda, MD	2.575	2.198	May 2012	0.900	May 2013	0.510	May 2014	-		0.510	Continuing	Continuing	Continuing
Primary Hardware Development-SVPDA	WR	NSWC Carderock:Bethesda, MD	0.000	1.200	Oct 2011	0.000		0.000		-		0.000	0.000	1.200	
Systems Engineering-SVPDA	WR	NSWC Carderock:Bethesda, MD	0.000	0.600	Oct 2011	0.000		0.000		-		0.000	0.000	0.600	
Engineering Development-SVPDA	WR	NSWC Carderock:Bethesda, MD	0.000	0.110	Nov 2011	0.000		0.000		-		0.000	0.000	0.110	
Demonstration & Evaluation-SVPDA	WR	NSWC Carderock:Bethesda, MD	0.000	0.870	May 2012	0.000		0.000		-		0.000	0.000	0.870	
Subtotal			8.305	11.196		4.370		2.606		0.000		2.606			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Development Support	WR	NSWC Carderock:Bethesda, MD	0.000	0.200	Dec 2011	0.200	Nov 2012	0.300	Nov 2013	-		0.300	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Support	WR	NSWC Carderock:Bethesda, MD	0.000	0.200	Dec 2011	0.100	Dec 2012	0.150	Dec 2013	-		0.150	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	NSWC Carderock:Bethesda, MD	0.000	0.300	Dec 2011	0.200	May 2013	0.200	May 2014	-		0.200	Continuing	Continuing	Continuing
Study Anaylsis	WR	NSWC Carderock:Bethesda, MD	0.000	0.200	Apr 2012	0.200	Dec 2012	0.300	Dec 2013	-		0.300	Continuing	Continuing	Continuing
Subtotal			0.000	0.900		0.700		0.950		0.000		0.950			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC Carderock:Bethesda, MD	2.728	1.698	Nov 2011	1.450	Jan 2013	2.140	Dec 2013	-		2.140	Continuing	Continuing	Continuing
Operational Test & Evaluation	WR	NSWC Carderock:Bethesda, MD	1.280	1.748	Jan 2012	0.950	May 2013	0.800	Mar 2014	-		0.800	Continuing	Continuing	Continuing
Live Fire Test & Evaluation	WR	NSWC Carderock:Bethesda, MD	0.382	0.000		0.000		0.000		-		0.000	0.000	0.382	
Developmental Test & Evaluation-SVPDA	WR	NSWC Carderock:Bethesda, MD	0.000	0.060	Nov 2011	0.000		0.000		-		0.000	0.000	0.060	
Subtotal			4.390	3.506		2.400		2.940		0.000		2.940			

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Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	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	1.042	0.900	Oct 2011	1.280	Oct 2012	1.194	Oct 2013	-		1.194	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA HQ: Washington, DC	0.119	0.015	Sep 2012	0.020	Nov 2012	0.005	Oct 2013	-		0.005	Continuing	Continuing	Continuing
Total Assets	WR	NSWC Carderock: Bethesda, MD	0.252	0.100	Mar 2012	0.000		0.000		-		0.000	0.000	0.352	
Program Management Support-SVPDA	WR	NSWC Carderock: Bethesda, MD	0.000	0.452	Oct 2011	0.000		0.000		-		0.000	0.000	0.452	
Subtotal			1.413	1.467		1.300		1.199		0.000		1.199			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			14.108	17.069		8.770		7.695		0.000		7.695			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy																DATE: April 2013												
APPROPRIATION/BUDGET ACTIVITY												R-1 ITEM NOMENCLATURE								PROJECT								
1319: Research, Development, Test & Evaluation, Navy												PE 0603724N: Navy Energy Program								0829.: ENERGY CONSERVATION (ADV)								
BA 4: Advanced Component Development & Prototypes (ACD&P)																												
ENERGY CONSERVATION (ADV)	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	Proposal Development - FY12				Proposal Development - FY13				Proposal Development - FY14				Proposal Development - FY15				Proposal Development - FY16				Proposal Development - FY17				Proposal Development - FY18			
	Proposal Acceptance																											
	Model & Simulation (if required)																											
	Prototype Development																											
	Prototype Demo																											
	Land Based Testing																											
	Determine Fuel and Maintenance Savings																											
	Shipboard Evaluation																											
	Component Implementation Maintenance Savings																											

2014OSD - 0603724N - 0829.S24

2014OSD - 0603724N - 0829.S24

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0829.: <i>ENERGY CONSERVATION (ADV)</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
ENERGY CONSERVATION (ADV)				
Proposal Development - FY12	1	2012	3	2012
Proposal Development - FY13	1	2013	3	2013
Proposal Development - FY14	1	2014	3	2014
Proposal Development - FY15	1	2015	3	2015
Proposal Development - FY16	1	2016	3	2016
Proposal Development - FY17	1	2017	3	2017
Proposal Development - FY18	1	2018	3	2018
Proposal Acceptance	1	2012	3	2018
Model & Simulation (if required)	1	2012	4	2018
Prototype Development	1	2012	4	2018
Prototype Demo	1	2012	4	2018
Land Based Testing	1	2012	4	2018
Determine Fuel and Maintenance Savings	1	2012	4	2018
Shipboard Evaluation	1	2012	4	2018
Component Implementation Maintenance Savings	1	2012	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy									DATE: April 2013			
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)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0838: Mobility Fuels (ADV)	25.729	15.749	11.071	7.649	-	7.649	18.975	14.956	12.219	12.427	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
This project provides data through laboratory, component, engine, fuel system, and weapon system tests, which relate the effects of changes in the Navy fuel procurement specification properties and chemistries to the performance and reliability of Naval ship, aircraft, and fuel distribution systems. The information is required to: (a) develop, validate, and execute the test protocols necessary to approve fuels 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 specifications are unavailable or in short supply, (d) technically justify changes to fuel specifications to ensure fuel quality and avoid fleet operating problems while accommodating evolutionary changes in fuel supply, and (e) improve capability to provide fuel quality surveillance in the field. Continued volatility and rapid escalation of the cost of fuel have placed additional pressures on 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 use 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 effects that fuel-related problems can have on ship and aircraft system performance, reliability, and readiness. While the program 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. The potential risk of fuel-related problems over the next decade, given the unknown supply, feedstocks, environmental regulations, and the introduction of new theaters of operation, will continue to increase. This project represents the Navy's only investment designed to maintain its capability to operate as a "smart" customer for fuels that cost over \$4.0B per year for procurement, transport, storage, and consumption, and are essential to fleet operations. Additionally, it is the Navy's only investment in the approval of alternative fuels for tactical applications and directly supports the Navy's energy goals of increased energy security and environmental stewardship.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: Naval Tactical Fuels									15.749	11.071	7.649	
									0	0	0	
Description: Perform development, test and evaluation work on Naval tactical 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												

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0838: <i>Mobility Fuels (ADV)</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013
problems while accommodating evolutionary changes in the fuel supply industry and d) improve fleet methods to ensure fuel quality.			
FY 2012 Accomplishments: Complete propulsion and system testing of 50/50 bio-blend JP-5 and 50/50 bio-blend F-76. Initiate rig, laboratory and component testing on JP-5 and F-76 containing greater than 50% of bio-derived components. Revise aircraft, ship, and infrastructure alternative fuels protocols.			
FY 2013 Plans: Continue rig and propulsion system testing on aircraft and ship biofuels blends containing greater than 50% bio-derived components. Initiate ship and aircraft trials on biofuel blends containing greater than 50% bio-derived components. Initiate laboratory and rig testing on promising advanced biofuel production pathway fuels.			
FY 2014 Plans: Expand the list of qualified renewable sources/production pathways for inclusion into the JP-5 and F-76 specifications. Complete hardware testing on direct sugar-to-hydrocarbon and biomass-to-alcohol-to-jet production pathways. Continue laboratory and rig testing, and begin component testing on advanced biofuel production pathway. Evaluate impact of increased use of commercial shipboard propulsion fuel. Evaluate impact on Navy operations of government regulations requiring mandatory addition of fatty acid methyl ester into commercial diesel fuel.			
Accomplishments/Planned Programs Subtotals		15.749	11.071
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
Alternative Fuel Efforts including testing and fuel procurement efforts will be competitively contracted, and performed under Cost Plus Fixed Fee and Firm Fixed Price 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.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	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.	1.025	0.481	Nov 2011	0.500	Nov 2012	0.350	Dec 2013	-		0.350	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCAD:Patuxent River, MD	5.182	2.500	Nov 2011	1.019	Nov 2012	0.400	Nov 2013	-		0.400	Continuing	Continuing	Continuing
Systems Engineering	WR	DLA-Energy:Ft. Belvoir, VA	0.000	0.010	Nov 2011	0.100	Nov 2012	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NAVSEA:Philadelphia, PA	0.000	0.425	Jan 2012	0.100	Nov 2012	0.100	Dec 2013	-		0.100	Continuing	Continuing	Continuing
Systems Engineering	C/FFP	L-3 Communications:Marlton, NJ	0.000	0.039	Jan 2012	0.000		0.000		-		0.000	0.000	0.039	0.039
Systems Engineering	C/FFP	FEV, Inc.:Auburn Hills, MI	0.000	2.785	Aug 2012	0.000		0.000		-		0.000	0.000	2.785	2.785
Engineering Development	C/CPFF	Various:Various	2.201	0.000		0.000		0.000		-		0.000	0.000	2.201	2.201
Subtotal			8.408	6.240		1.719		0.850		0.000		0.850			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	C/CPFF	Various:Various	7.511	0.000		0.000		0.000		-		0.000	0.000	7.511	7.511
Developmental Test & Evaluation	MIPR	Army Tank/Arm:Warren, MN	0.228	0.000		0.000		0.000		-		0.000	0.000	0.228	0.228
Developmental Test & Evaluation	C/CPFF	Life Cycle Engineering:Charleston, SC	3.000	2.926	Nov 2012	0.000		0.000		-		0.000	0.000	5.926	5.926
Test Fuel	C/FFP	TBD:TBD	0.000	2.255	Aug 2012	1.720	Jan 2013	1.000	Mar 2014	-		1.000	0.000	4.975	4.975
Hardware Testing	WR	NSWC:Panama City, FL	0.000	0.040	Nov 2011	0.000		0.000		-		0.000	0.000	0.040	
Hardware Testing	SS/CPFF	General Electric:Lynn, MA	0.000	2.200	Aug 2012	0.700	Mar 2013	0.700	Apr 2014	-		0.700	0.000	3.600	3.600

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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)					
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Testing	SS/CPFF	Rolls Royce:Indianapolis, IN	0.000	0.000		0.700	Mar 2013	0.700	Mar 2014	-		0.700	0.000	1.400	1.400
Hardware Testing	C/CPFF	TBD:TBD	0.000	0.159	Aug 2012	2.000	May 2013	1.850	Mar 2014	-		1.850	0.000	4.009	4.009
Hardware Testing	WR	NAWCAD:Patuxent River, MD	0.000	1.000	Nov 2011	2.000	Jan 2013	1.000	Dec 2013	-		1.000	Continuing	Continuing	Continuing
Hardware Testing	C/CPFF	Life Cycle Engineering:Charleston, SC	0.000	0.000		1.552	Jan 2013	1.200	Mar 2014	-		1.200	0.000	2.752	2.752
Hardware Testing	C/FFP	Hughes Associates:Baltimore, MD	0.000	0.040	Mar 2012	0.000		0.000		-		0.000	0.000	0.040	0.040
Hardware Testing	WR	NSWC Carderock:Bethesda, MD	0.000	0.104	Mar 2012	0.000		0.000		-		0.000	0.000	0.104	
Hardware Testing	WR	Naval Shipyard:Puget Sound, WA	0.000	0.011	Mar 2012	0.000		0.000		-		0.000	0.000	0.011	
Hardware Testing	C/FFP	AMSEC, LLC:Virginia Beach, VA	0.000	0.147	Apr 2012	0.000		0.000		-		0.000	0.000	0.147	0.147
Hardware Testing	WR	NSWC:Philadelphia, PA	0.000	0.080	Aug 2012	0.000		0.000		-		0.000	0.000	0.080	
Subtotal			10.739	8.962		8.672		6.450		0.000		6.450			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	Various:Various	5.690	0.000		0.000		0.000		-		0.000	0.000	5.690	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	MIPR	SRI:San Antonio, TX	0.696	0.000		0.000		0.000		-		0.000	0.000	0.696	0.696
Program Management Support	WR	NAVSEA:Washington, DC	0.100	0.000		0.000		0.000		-		0.000	0.000	0.100	
Program Management Support	WR	NSWC:Philadelphia, PA	0.088	0.000		0.000		0.050	Dec 2013	-		0.050	0.000	0.138	
Program Management Support	WR	NAWCAD:Patuxent River, MD	0.000	0.539	Nov 2011	0.680	Nov 2012	0.249	Nov 2013	-		0.249	Continuing	Continuing	Continuing
Program Management Support	WR	NAVSUP:San Diego, CA	0.000	0.008	Dec 2011	0.000		0.050	Oct 2013	-		0.050	0.000	0.058	
DAWDF Realignment Issue 74408	TBD	Not Specified:Not Specified	0.008	0.000		0.000		0.000		-		0.000	0.000	0.008	
Subtotal			6.582	0.547		0.680		0.349		0.000		0.349			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			25.729	15.749		11.071		7.649		0.000		7.649			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy														DATE: April 2013																							
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)																			
Mobility Fuels (ADV)										FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
										1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Alternative Fuel Evaluation/Certification																																					
50/50 BioFuel Blend Hardware Testing																																					
50/50 Ship/Aircraft Demonstrations																																					
Green Carrier Strike Group Fleet Demonstration																																					
Generation 2 Protocol Development																																					
																													</								

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0838: <i>Mobility Fuels (ADV)</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Mobility Fuels (ADV)</i>				
Alternative Fuel Evaluation/Certification	1	2012	4	2018
50/50 BioFuel Blend Hardware Testing	1	2012	2	2012
50/50 Ship/Aircraft Demonstrations	1	2012	2	2012
Green Carrier Strike Group Fleet Demonstration	1	2012	4	2012
Generation 2 Protocol Development	1	2012	4	2012
Generation 3 Protocol Development	2	2014	3	2015
50% Bio Derived Lab/Hardware Testing	4	2012	2	2015
50% Bio Derived Ship/Aircraft Demonstrations	3	2015	2	2016
Advanced BioFuel Lab/Rig Testing	3	2013	4	2015
Advanced BioFuel Hardware Testing	1	2015	4	2018
Green Carrier Strike Group Sail	1	2015	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy									DATE: April 2013			
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 0928: Directed Energy Research			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0928: Directed Energy Research	13.404	13.404	16.243	1.870	-	1.870	8.627	3.603	2.860	2.892	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Legislation, Executive Orders (EO), and SECNAV Guidance direct DoN to reduce fossil fuel use and increase renewable energy use. This guidance includes the Energy Policy Act of 2005, which directs agencies to reduce energy intensity 30% by 2015, the National Defense Authorization Act of 2010, which directs DOD to source 25% of its energy from renewable sources by 2025, EO13514, which directs DOD to reduce greenhouse gas emissions by 2020, and SECNAV energy goals, which direct that 50% of DoN's energy come from alternative sources by 2020. Further, studies by the Defense Science Board and others have stressed the dangerous reliance of DOD on vulnerable grid power and unreliable imported oil. Currently, the Navy has limited options for producing energy from renewable sources. Private industry and other federal agencies are developing and testing new technologies. Renewable energy from the ocean such as wave, sea water air conditioning, tidal energy, outer continental shelf wind development, ammonia production and utilization, vortex induced vibration marine hydrokinetic, and compressed air storage for ocean energy, among other technologies have potential to alleviate current Navy island installation dependence on fossil fuel, at comparable costs to projected fossil energy sources. Also, advanced energy management systems have potential to increase installation energy security and enable broader use of renewable energy sources. Because of unique mission and aggressive time frames, testing and demonstration under Navy oversight would facilitate deployment throughout the DoN more quickly than a purely passive approach.												
This Energy RDT&E Project will test, evaluate, and validate components as well as demonstrate cost-effective and technical viability of energy efficiency and renewable energy prototypes. All efforts will be coordinated across DOD and with other agencies as appropriate. Specifically, this project aims to pursue three areas of development, testing and evaluation: (A) Renewable Energy to support feasibility evaluation, modeling and possible prototype testing of new energy sources for use at Naval installations with potential for widespread applicability to energy security and renewable energy requirements. Other renewable sources for evaluation, modeling and possible prototype testing may include energy storage (dead-ended fuel cell, zinc air battery, etc.), facility level concentrating solar power, next generation solar heat reflective film, plasma lighting for high wattage applications, micro-inverters for photo-voltaic storage, building level micro-grid, new generation waste heat capture, and other technologies; (B) It will support demonstration and validation of advanced electric grid management systems, known as "Smart Grid" technology, for use at Naval installations to enable improved energy security; (C) Demonstration and Validation of Alternative Energy, Energy Efficiency, Sustainable Building Features, Alternative Fuel Vehicles, and Smart Energy Management Technology: This project will support the testing, demonstration, validation, and application of innovative facility energy efficiency and alternative energy technology.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: Directed Energy Research									13.404	16.243	1.870	
									Articles: 0	0	0	

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0928: <i>Directed Energy Research</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013
<i>FY 2012 Accomplishments:</i> Initiated component and prototype planning and development for alternative energy and advanced grid management technology at Naval Installations as follows: - Initiated evaluation of environmental impacts of ocean wave, sea water air conditioning and other ocean energy generation prototypes - Initiated planning and development of advanced wave energy generation prototypes - Initiated planning and development of advanced grid management technology at Naval installations - Initiated demonstration, testing, deployment, and evaluation of energy efficient and alternative energy technology innovations <i>FY 2013 Plans:</i> Perform component testing and prototype development and deployment for alternative energy and advanced grid management technology at Naval installations as follows: - Evaluation of environmental impacts of ocean renewable energy generation systems - Developing, evaluating, and begin installation of supporting equipment for validation of ocean renewable energy generation components and prototypes - Evaluation, and planning for outer continental shelf wind, photovoltaic, ocean compressed air storage and other promising technologies - Demonstration, testing, deployment, and evaluation of smart energy management technology, - Demonstration and validation of mature technologies to be transitioned such as advanced, sustainable building technologies, solar PV collection technologies, alternative fuel vehicles, and improved energy storage systems at Naval installations <i>FY 2014 Plans:</i> Perform component testing and prototype development and deployment for alternative energy and advanced lighting grid management technology at Naval installations as follows: - Evaluation of environmental impacts of ocean renewable energy generation systems - Evaluating and testing Wave Energy Systems - Begin development of technical specifications and acquisition strategies for wave energy systems - Evaluation, and planning for outer continental shelf wind, photovoltaic, ocean compressed air storage and other promising technologies - Demonstration, testing, deployment, and evaluation of smart energy management technology, and begin development of technical specifications			

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy		DATE: April 2013	
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>		R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0928: <i>Directed Energy Research</i>
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013
- Demonstration and validation of mature technologies to be transitioned such as advanced lighting, sustainable building technologies, solar PV collection technologies, alternative fuel vehicles, and improved energy storage systems at Naval installations			
Accomplishments/Planned Programs Subtotals		13.404	16.243
FY 2014			
1.870			
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy Demonstration and validation are conducted for maximum transfer and interaction with industry such as to influence the industry COTS with the results of this demonstration and prototype validation. Acquisition is based on performance specifications enabled by this project.			
E. Performance Metrics The program will be coordinated across DOD and with other agencies as appropriate to achieve 30% Energy Intensity Reduction by FY2015 and 25% Renewable Energy Increase by 2025.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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 0928: Directed Energy Research					
Product Development (\$ in Millions)															
				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Renewable Energy	Various	EXWC:Port Hueneme, CA	11.854	11.854	Sep 2012	15.243	Jul 2013	1.215	Mar 2014	-		1.215	Continuing	Continuing	Continuing
Smart Energy	Various	EXWC:Port Hueneme, CA	0.550	0.550	Sep 2012	0.000		0.468	Apr 2014	-		0.468	Continuing	Continuing	Continuing
Demonstration/Validation	Various	EXWC:Port Hueneme, CA	1.000	1.000	Sep 2012	1.000	Apr 2013	0.187	Apr 2014	-		0.187	Continuing	Continuing	Continuing
Subtotal			13.404	13.404		16.243		1.870		0.000		1.870			
Remarks															
(FY2014) The Navy Energy Program will be assessing multiple technologies for energy efficiency and energy reduction. This technology assessment continues throughout the program life. As these technologies are assessed, they will be incorporated individually into the shore installation by a variety of acquisition strategies including Energy Savings Performance Contract vehicles, and globally by changes to design and construction criteria coordinated across the services. These, too, will continue throughout the program life. For Smart Energy, and select other technologies, there will be a requirement for component testing and validation. In FY14, wave energy systems will include operation and demonstration through FY15/FY16 timeframe, resulting in development of test and evaluation results and lessons learned by the end of FY16. At the end of the demonstration and evaluation phase, it is expected that feasibility determinations larger, commercial scale plants, including the recommended acquisition strategies to acquire the power, will be provided as part of the final deliverable. This will be followed by criteria development to transition the technical aspects required to acquire a full scale system targeted to support one of several Naval Bases throughout the testing and evaluation period, deliverables will be required at the end of each FY for component test results, validated components, and pilot prototype design and testing.															
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			13.404	13.404		16.243		1.870		0.000		1.870			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy																DATE: April 2013												
APPROPRIATION/BUDGET ACTIVITY												R-1 ITEM NOMENCLATURE								PROJECT								
1319: Research, Development, Test & Evaluation, Navy												PE 0603724N: Navy Energy Program								0928: Directed Energy Research								
BA 4: Advanced Component Development & Prototypes (ACD&P)																												
Renewable Energy	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	Technology Assessment																											
	Concept of Employment																											
	Demonstration																											
	Prototype construction																											

2014OSD - 0603724N - 0928

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PE 0603724N: *Navy Energy Program*
Navy

R-1 Line #58

R-1 ITEM NOMENCLATURE

PE 0603724N: Navy Energy Program

0928: *Directed Energy Research*[illegible]

2014OSD - 0603724N - 0928

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PE 0603724N: *Navy Energy Program*
Navy

R-1 Line #58

R-1 ITEM NOMENCLATURE

PE 0603724N: Navy Energy Program

0928: *Directed Energy Research*[illegible]

2014OSD - 0603724N - 0928

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0928: <i>Directed Energy Research</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Renewable Energy</i>				
Technology Assessment	2	2012	4	2018
Concept of Employment	2	2012	4	2018
Prototype Construction	2	2013	4	2018
Demonstration	4	2013	4	2016
<i>Smart Energy</i>				
Technology Evaluation	3	2012	4	2016
<i>Demonstration/Validation</i>				
Smart Energy and Other Technologies	3	2012	4	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy										DATE: April 2013		
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 0996: Aircraft Energy Conservation			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0996: Aircraft Energy Conservation	0.000	23.622	19.240	28.404	-	28.404	52.223	27.467	24.139	24.551	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note												
Project 0996 funding and efforts were realigned from project 0929 in FY 2012.												
A. Mission Description and Budget Item Justification												
The Aircraft Energy Conservation program is designed to develop and implement energy and maintenance saving improvements into existing fleet assets. The program identifies, evaluates, and implements energy savings initiatives for potential implementation into Naval aircraft. The objective of the program is to engage technical experts from across Naval aviation, industry, and academia to identify mature potential energy saving opportunities and determine the technical and fiscal viability of implementing them in existing aircraft platforms.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2012	FY 2013	FY 2014
Title: Aircraft Energy Conservation										23.622	19.240	28.404
										0	0	0
FY 2012 Accomplishments: Complete F/A 18 bring-back weight study. Conduct advanced engine efficiency technology demonstration. Conduct field trial of drag resistant aircraft coatings. Implement fleet i-ENCON (Energy Conservation) program. Complete air vehicle energy savings technology study.												
FY 2013 Plans: Continue fleet energy conservation program. Continue drag-resistant aircraft coating trial. Develop F135 engine efficiency technology. Initiate F-35 air vehicle energy efficiency technology development program.												
FY 2014 Plans: Conduct preliminary design for F135 engine fuel burn reduction demonstration. Implement AIR-ENCON full program launch. Conduct evaluation/assessment of advanced mission planning and navigation technologies. Conduct assessment of aircraft subsystem energy efficiency technologies.												
Accomplishments/Planned Programs Subtotals										23.622	19.240	28.404

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0996: <i>Aircraft Energy Conservation</i>
C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
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 aircraft demonstration testing.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
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 0996: Aircraft Energy Conservation					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWCAD:Patuxent River, MD	0.000	2.000	Feb 2012	1.540	Nov 2012	3.000	Dec 2013	-		3.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	Lockheed Martin:Fort Worth, TX	0.000	0.000		1.000	Mar 2013	2.700	Feb 2014	-		2.700	0.000	3.700	3.700
Systems Engineering	C/FFP	SAIC:McLean, VA	0.000	0.207	Apr 2012	0.000		0.000		-		0.000	0.000	0.207	0.207
Systems Engineering	C/CPFF	Various:Various	0.000	0.000		1.190	Mar 2013	1.200	Mar 2014	-		1.200	0.000	2.390	2.390
Systems Engineering	WR	NAWCWD:Point Mugu, CA	0.000	0.091	Jun 2012	0.000		0.000		-		0.000	0.000	0.091	0.091
Systems Engineering	WR	Army Redstone Arsenal:Huntsville, AL	0.000	0.006	Feb 2012	0.000		0.000		-		0.000	0.000	0.006	0.006
Subtotal			0.000	2.304		3.730		6.900		0.000		6.900			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Testing	C/CPFF	PWA:Hartford, CT	0.000	20.025	Nov 2012	13.400	Mar 2013	18.900	Jan 2014	-		18.900	0.000	52.325	52.325
Hardware Testing	WR	NAWCAD:Patuxent River, MD	0.000	0.000		0.600	Jan 2013	0.000		-		0.000	Continuing	Continuing	Continuing
Hardware Testing	C/CPFF	Various:Various	0.000	0.000		1.000	May 2013	0.900	Mar 2014	-		0.900	0.000	1.900	1.900
Subtotal			0.000	20.025		15.000		19.800		0.000		19.800			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	WR	NAWCAD:Patuxent River, MD	0.000	0.061	Feb 2012	0.510	Nov 2012	0.204	Dec 2013	-		0.204	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy													DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>							R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>				PROJECT 0996: <i>Aircraft Energy Conservation</i>				
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/FFP	L3 Communications:Marlton, NJ	0.000	1.232	Jun 2012	0.000		0.000		-		0.000	0.000	1.232	1.232
Program Management Support	C/FFP	TBD:TBD	0.000	0.000		0.000		1.500	Dec 2013	-		1.500	0.000	1.500	1.500
Subtotal			0.000	1.293		0.510		1.704		0.000		1.704			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	23.622		19.240		28.404		0.000		28.404			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy																DATE: April 2013																
APPROPRIATION/BUDGET ACTIVITY																R-1 ITEM NOMENCLATURE								PROJECT								
1319: Research, Development, Test & Evaluation, Navy																PE 0603724N: Navy Energy Program								0996: Aircraft Energy Conservation								
BA 4: Advanced Component Development & Prototypes (ACD&P)																																
Proj 0996	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
	Aircraft Energy Conservation																Air ENCON Program															
																	Air Vehicle Energy Efficiency RDT&E															
																	Engine Efficiency RDT&E															
																	Mission Planning Upgrades															
2014OSD - 0603724N - 0996																																

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	R-1 ITEM NOMENCLATURE PE 0603724N: <i>Navy Energy Program</i>	PROJECT 0996: <i>Aircraft Energy Conservation</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0996				
Aircraft Energy Conservation: Air ENCON Program	1	2012	4	2018
Aircraft Energy Conservation: Air Vehicle Energy Efficiency RDT&E	1	2012	4	2018
Aircraft Energy Conservation: Engine Efficiency RDT&E	1	2012	4	2018
Aircraft Energy Conservation: Mission Planning Upgrades	1	2012	4	2016