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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy **DATE:** February 2011

COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	4.253	-	-	-	-	-	-	-	0.000	4.253
0770: Adv Sub Supp Equip Prog	-	4.253	-	-	-	-	-	-	-	0.000	4.253

A. Mission Description and Budget Item Justification

The Submarine Tactical Warfare Systems MIP program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP). The objective is to improve submarine operational effectiveness through the development and implementation of advanced Research and Development (R&D). In order to provide improved operational effectiveness, research and development, efforts are focused on Advanced Imaging Developments and Advanced Electronic Warfare Support (ES) Developments. A continuing need exists to improve these capabilities in view of the advancements in potential imaging counter detection, the need to support specialized missions and the increasingly dense and sophisticated electronic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Ongoing developments in 360 degree imaging systems technologies are supporting these needs.

B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	4.253	4.334	-	4.334
Current President's Budget	-	4.253	-	-	-
Total Adjustments	-	-	-4.334	-	-4.334
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-4.182	-	-4.182
• Rate/Misc Adjustments	-	-	-0.152	-	-0.152

Change Summary Explanation

Technical: Not applicable.

Schedule: Not applicable.

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy **DATE:** February 2011

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 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
0770: <i>Adv Sub Supp Equip Prog</i>	-	4.253	-	-	-	-	-	-	-	0.000	4.253
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

A continuing need exists to improve Imaging and Electronic Warfare Support (ES) capabilities in view of the advancements in potential imaging counter detection and the increasingly dense electromagnetic environment caused by the proliferation of complex radar, communications, and navigation equipment of potential adversaries. Improvements are necessary for submarine ES and imaging to be operationally effective in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection and Joint Strike. The program is divided into two project categories: Advanced Imaging Project Development and Advanced Electronic Warfare Support Project Development. Both of these categories will allow for the evaluation of the vulnerability of submarine masts, periscopes and sensors to visual, radar, and infrared detection and evaluation of state of the art technology to implement periscope/mast engineering improvements to reduce counter detection threats, the pursuit of technologies (such as 360 degree imaging systems) to develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies available from academia and other sources. Engineering demonstration models (EDMs) are developed, evaluated, and validated in the lab and through at-sea testing.

The Advanced Imaging Project Development Projects include the development of: 360 Degree Imaging - Far Term Advanced System, 360 Degree Imaging - Near Term System, 360 Degree Submarine Panoramic Infra-Red (SPIR) Imaging System, 360 Degree Affordable Modular Panoramic Periscope (AMPP), Advanced Head Window Water Shedding, Electro-Optic/Infrared Vulnerability Signature Reduction, Low Cost, Multi-Spectral Grade A Head Window and Mast Signature Reduction. The Advanced Electronic Warfare Support (ES) Development Projects include the development of: Distant ES Support and Remote Log-In, Rapid Reprogram Threat Library, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool, Integrated ES and ECS Radio Frequency Distribution Unit (RFDU) and Multi-function Modular Mast (MMM) Payloads.

All programs funded in this project are non-acquisition category programs. The test articles identified consist of critical components that will be fully developed during engineering development into Engineering Development Models (EDMs).

ASSEP Program was transferred from a Military Intelligence Program, Program Element (PE) 0303562N in Fiscal Year 2012 back to PE 0603562N.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
<p>Title: Advanced Electronic Warfare Support (ES) Project Development</p> <p style="text-align: right;">Articles:</p> <p>Description: 360 Degree Imaging (JPL) - Far Term Advanced System: Spiral 1 Testing & Spiral 2 Development 360 Degree Submarine Panoramic Mid-wave Infra-Red (MWIR) Imaging System; Generate Performance Specification 360 Degree Affordable Modular Panoramic Periscope (AMPP) - Generate Performance Specifications</p>	-	3.086 0	-

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011	
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 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>	
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011
Advanced Head Window Water Shedding - At Sea Test and BIO-Fouling Report Low Cost, Multi-Spectral Grade A Head Window Mast Signature Reduction - Thermal Studies FY 2011 Plans: FY 2011 Plans/Accomplishments: Distant ES Support Remote Log-In: At-Sea Test and Transition to EW ES Vulnerability Tool: Lab Demonstration Rapid Reprogram Threat Library: At-Sea Test and Transition to EW			
Title: Advanced Electronic Warfare Support (ES) Project Development. FY 2011 Plans: Capability Insertions (CI) Distant ES Support and Remote Log-In - At Sea Testing Specific Emitter Identification (SEI) Improvements - At Sea Testing ES Vulnerability Tool - Lab Testing		Articles:	- 1.167 0
Accomplishments/Planned Programs Subtotals		-	4.253
C. Other Program Funding Summary (\$ in Millions) N/A			
D. Acquisition Strategy This project optimizes technology insertion using a build-test-build approach to support ES and imaging operational needs. Operational needs have been based on the tactical requirements identified in CNO letters, Serial N77/3U629212, dated 04 Sep 03, CNO Ltr Ser N772/5U936037 dtd 13 JUN 2005, CNO Ltr Ser N776/4U786103 dtd 1 APR 2004, COMSUBLANT/ COMSUBPAC, Virginia Class SSN Operational Requirements Documentation objectives, ORD for Photonics (ORD #365-87-94) [dtd JUL 1994], Operational Requirements Document (ORD) for ES (ORD # 570-77-00) [dtd 20 DEC 2000], ORD for ISIS (ORD #663-77-05) [dtd MAR 2005. Project efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available from and other sources. Engineering Demonstration Models (EDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.			
E. Performance Metrics The RDD program goal is to respond to urgent operational needs within 30 days and provide for rapid development and fielding of prototype solutions within 270 days.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>
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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	SS/CPHF	JPL:Pasadena, CA	-	1.947	Dec 2010	-		-		-	0.000	1.947	Continuing
Systems Engineering	WR	NUWC:Newport, RI	-	2.032	Dec 2010	-		-		-	0.000	2.032	Continuing
Subtotal			-	3.979		-		-		-	0.000	3.979	

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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
Engineering Technical Services	C/CPAF	AT&T GSI:Vienna, VA	-	0.240	Oct 2010	-		-		-	0.000	0.240	Continuing
Subtotal			-	0.240		-		-		-	0.000	0.240	

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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
Travel	WR	NAVSEA:WNY	-	0.034	Oct 2010	-		-		-	0.000	0.034	Continuing
Subtotal			-	0.034		-		-		-	0.000	0.034	

			Total Prior Years Cost	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.253	-	-	-	0.000	4.253	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
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 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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 0303562N: <i>Submarine Tactical Warfare Systems - MIP</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0770				
360 Degree Imaging (ONR) - MWIR - (Performance Specification)	1	2011	1	2011
360 Degree Imaging (ONR) - MWIR - (Lab Demo)	3	2011	3	2011
360 Degree Imaging (JPL) - High Resolution (Spiral 1 Lab Demo)	2	2011	2	2011
360 Degree Imaging (JPL) - High Resolution (Spiral 2 Lab Demo)	2	2011	2	2011
360 Degree Imaging (ONR) - AMPP- (Performance Specification)	3	2011	3	2011
Head Window Water Shedding (At-Sea Testing)	2	2011	2	2011
Head Window Water Shedding (Transition to Imaging)	1	2011	1	2011
Low Cost, Multi-Spectral, Grade A, Head Window - (At-Sea Testing)	1	2011	1	2011
Low Cost, Multi-Spectral, Grade A, Head Window - (Transition to Imaging)	4	2011	4	2011
Electro-Optic/Infrared Vulnerability Signature Reduction (Special Wake Model Special)	3	2011	3	2011
Capability Insertions (CI) - (At-Sea Test - 1) Remote Log-In Operation	3	2011	3	2011
Capability Insertions (CI) - (Transistion to EW - 1 Remote Log-in/Operation)	4	2011	4	2011