

# UNCLASSIFIED

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2013 Navy **DATE:** February 2012

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>				PE 0603562N: <i>Submarine Tactical Warfare Sys</i>							
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	5.520	9.233	9.368	-	9.368	9.492	9.622	9.791	9.989	Continuing	Continuing
0770: <i>Adv Sub Supp Equip Prog</i>	-	3.890	3.989	-	3.989	4.019	4.076	4.152	4.236	Continuing	Continuing
1739: <i>Submarine Arctic W/F Development</i>	5.520	5.343	5.379	-	5.379	5.473	5.546	5.639	5.753	Continuing	Continuing

## A. Mission Description and Budget Item Justification

The Submarine Tactical Warfare Systems program element is comprised of the Advanced Submarine Support Equipment Program (ASSEP) and the Submarine Special Operations Support Program. 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, R&D 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 and electro-optic infra-red vulnerability signature reduction technologies are supporting these needs.

The Submarine Arctic Warfare Development program responds to the increased threat of naval activity in the littoral and the continuing threat of submarine and surface ship activity in regions of the world through the development of advanced submarine R&D technology to provide improved operational capability in shallow water regions. Particular emphasis is placed in the areas of sonar operability and maintainability, littoral operations, mine warfare, tactical surveillance, weapon utility, and other submarine support missions. Efforts include assessment of combat system effectiveness, development of Arctic specific improvements for existing sonars and weapons, development of class specific arctic operational guidelines, and the testing of ice-capable submarine support structures. This program also provides the framework for various R&D programs to conduct test and evaluation in shallow water and arctic regions.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy				DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
1319: Research, Development, Test & Evaluation, Navy		PE 0603562N: Submarine Tactical Warfare Sys			
BA 4: Advanced Component Development & Prototypes (ACD&P)					
B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	5.590	9.253	9.444	-	9.444
Current President's Budget	5.520	9.233	9.368	-	9.368
Total Adjustments	-0.070	-0.020	-0.076	-	-0.076
• Congressional General Reductions	-	-0.020			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.042	-			
• Program Adjustments	-	-	-0.046	-	-0.046
• Rate/Misc Adjustments	-	-	-0.030	-	-0.030
• Congressional General Reductions Adjustments	-0.028	-	-	-	-
Change Summary Explanation					
Schedule: Not applicable.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Navy	<b>DATE:</b> February 2012
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
0770: Adv Sub Supp Equip Prog	-	3.890	3.989	-	3.989	4.019	4.076	4.152	4.236	Continuing	Continuing
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, 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 Affordable Modular Panoramic Periscope Mast (AMPPM) - Near Term System, 360 Degree Submarine Panoramic Infra-Red (SPIR) Imaging System, Advanced Head Window Water Shedding, Electro-Optic/Infrared Vulnerability Signature Reduction, 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, Enhanced DeInterleavers, ES Server, LPI DF and ES OBT, 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 2011	FY 2012	FY 2013
<b>Title:</b> Advanced Imaging Project Development	-	2.293	1.558
<b>Articles:</b>		0	0
<b>FY 2012 Plans:</b>			
360 Degree Submarine Panoramic Mid-Wave Infra-Red (MWIR) Imaging System; Development			
360 Degree Affordable Modular Panoramic Periscope Mast (AMPPM); Demo TRL 4/5 HDTV NIR, Headwindow			
Advanced Head Window Water Shedding; At-Sea Testing and Bio-Fouling Report			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Navy		<b>DATE:</b> February 2012	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2011</b>	<b>FY 2012</b>
Mast Signature Reduction: Thermal Studies Low Profile Mast Development (Universal Controller Software & Hardware Test, EDM #1 Delivery)			
<b>FY 2013 Plans:</b> 360 Imaging (ONR) - AMPPM - (Demo TRL 6/7 HDTV NIR) Electro-Optic/Infrared Vulnerability Signature Reduction (At-Sea Test) Low Profile Mast Development (Universal Controller EDM #2 Delivery)			
<b>Title:</b> Advanced Electronic Warfare Support (ES) Project Development		-	1.597
<b>Articles:</b>			0
<b>FY 2012 Plans:</b> 1 - Distant ES Support Remote Log-In: At-Sea Test and Transition to EW 2 - Rapid Reprogram Threat Library: At-Sea Test and Transition to EW 3 - ES Vulnerability Tool: Development 4 - Enhanced DeInterleavers: Development 5 - ES Server: Development 6 - LPI DF: Development 7 - ES OBT: Development			
<b>FY 2013 Plans:</b> Technical Insertions (TI) - (At-Sea Test - 1 & 2) Technical Insertions (TI) - (Transition #1 & 2) Technical Insertion At-Sea Test #3 Technical Insertion Development #4 & 5			
<b>Accomplishments/Planned Programs Subtotals</b>		-	3.890
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>D. Acquisition Strategy</b> 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], Capability Development Document (CDD) for Submarine EW Systems (Ver-DRAFT) and CDD for Submarine Imaging Systems [Ver OCT 2009-DRAFT]. Project efforts develop			

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy		DATE: February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available from DoD Exploratory Development Programs, industry Independent Research and Development, 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.		
<b>E. Performance Metrics</b> 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 2013 Navy										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603562N: Submarine Tactical Warfare Sys				PROJECT 0770: Adv Sub Supp Equip Prog					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	NUWC:RI	5.014	2.525	Nov 2011	3.009	Nov 2012	-		3.009	0.000	10.548	
Primary Hardware Development	SS/CPIF	NRL:VA	1.777	-		-		-		-	0.000	1.777	1.777
Primary Hardware Development	SS/CPIF	NAWC:CA	5.769	-		-		-		-	0.000	5.769	5.769
System Engineering	SS/FFP	JHU/ARL:MD	0.318	0.381	Mar 2012	0.375	Mar 2013	-		0.375	0.000	1.074	
Primary Hardware Development	C/CPFF	3 Phoenix:VA	0.451	0.603	Mar 2012	0.338	Mar 2013	-		0.338	0.000	1.392	
Primary Hardware Development	SS/CPIF	NSWCCD Det Bethesda:MD	-	0.105	Jan 2012	-		-		-	0.000	0.105	
Subtotal			13.329	3.614		3.722		-		3.722	0.000	20.665	
Remarks													
All funds provided to Performing Activities via reimbursable WR for in-house efforts.													
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	1.115	0.240	Feb 2012	0.230	Feb 2013	-		0.230	0.000	1.585	1.585
Subtotal			1.115	0.240		0.230		-		0.230	0.000	1.585	1.585
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	0.148	0.036	Oct 2011	0.037	Oct 2012	-		0.037	0.000	0.221	
Subtotal			0.148	0.036		0.037		-		0.037	0.000	0.221	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy								DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603562N: Submarine Tactical Warfare Sys				PROJECT 0770: Adv Sub Supp Equip Prog			
	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	14.592	3.890		3.989		-		3.989	0.000	22.471	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Navy			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: Submarine Tactical Warfare Sys	<b>PROJECT</b> 0770: Adv Sub Supp Equip Prog	

## Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0770</b>				
360 Degree Imaging (ONR 360 MWIR) [Mid Term]: Pierside Testing Phase 1	3	2012	3	2012
360 Degree Imaging (ONR AMPP) - [ Long Term]: Demo TRL 4/5 HDTV NIR	3	2012	3	2012
360 Degree Imaging (ONR AMPP) - [ Long Term]: Demo TRL 6/7 HDTV NIR	3	2013	3	2013
360 Degree Imaging (ONR AMPP) - [ Long Term]: Demo TRL 7/8 HDTV NIR	3	2014	3	2014
360 Degree Imaging (ONR AMPP) - [ Long Term]: Lab Demo Complete Periscope	3	2015	3	2015
360 Degree Imaging (ONR AMPP) - [ Long Term]: Pierside Testing	4	2015	4	2015
360 Degree Imaging (ONR AMPP) - [ Long Term]: Diploop/EHP Development	2	2016	2	2016
360 Degree Imaging (ONR AMPP) - [ Long Term]: Incorp Science & Techn Development	1	2017	1	2017
360 Degree Imaging (ONR AMPP) - [ Long Term]: Long Term	3	2011	4	2017
Low Profile Mast (Universal Mast Controller): UMC Software Lab Test	2	2012	2	2012
Low Profile Mast (Universal Mast Controller): UMC Hardware Lab Test	3	2012	3	2012
Low Profile Mast (Universal Mast Controller): UMC EDM Delivery #1	4	2012	4	2012
Low Profile Mast (Universal Mast Controller): UMC EDM Delivery #2	1	2013	1	2013
Electro-Optic/Infrared Vulnerability Signature Reduction: Update TDA	2	2012	2	2012
Electro-Optic/Infrared Vulnerability Signature Reduction: Update TDA GUI	4	2012	4	2012
Electro-Optic/Infrared Vulnerability Signature Reduction: At-Sea Test	4	2013	4	2013
Electro-Optic/Infrared Vulnerability Signature Reduction: Transition to Imaging	3	2014	3	2014
Capability Insert (CI): At-Sea Test 2 / 3	1	2012	1	2012
Capability Insert (CI): Transition - 2 / 3	2	2012	2	2012
Capability Insert (CI): Develop - 4 ES Server / 5 LPS DF	3	2012	3	2012

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Navy	<b>DATE:</b> February 2012
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 0770: <i>Adv Sub Supp Equip Prog</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Capability Insert (CI): At-Sea Test - 4 / 5	3	2013	3	2013
Capability Insert (CI): Transition to EW - 4 / 5	4	2013	4	2013
Capability Insert (CI): Develop - 6 Embedded BIT	2	2014	2	2014
Capability Insert (CI): Develop 7 ES OBT and 8 Next Gen Processor	3	2014	3	2014
Capability Insert (CI): At-Sea Test 6	3	2015	3	2015
Capability Insert (CI): Transition 6	1	2016	1	2016
Capability Insert (CI): At-Sea Test 7 / 8	2	2016	2	2016
Capability Insert (CI): Transition 7 / 8	4	2016	4	2016
Capability Insert (CI): Develop 9 Common Early Warning Receiver	1	2017	1	2017
Capability Insert (CI):	3	2011	4	2017
Head Window Water Shedding: Comparison Testing	1	2012	3	2012
Head Window Water Shedding: Transition to Imaging	3	2012	3	2012

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy								DATE: February 2012				
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603562N: Submarine Tactical Warfare Sys				PROJECT 1739: Submarine Arctic W/F Development				
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost	
1739: Submarine Arctic W/F Development	5.520	5.343	5.379	-	5.379	5.473	5.546	5.639	5.753	Continuing	Continuing	
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0			
A. Mission Description and Budget Item Justification												
The Submarine Arctic Warfare Development project responds to the increased threat of submarine and surface ship activity in arctic regions of the world through the development of advanced submarine concepts. It places particular emphasis on submarine operability and mission support in unique, cold, ice-covered, environments. Efforts include assessment of combat system effectiveness, weapons testing, use of high frequency sonars in arctic regions, testing of ice-capable submarine structures, and development of class-specific arctic operational guidelines. This project also provides the framework for various research and development programs to conduct test and evaluation in shallow water and arctic regions.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013		
Title: Conduct ICEX and Arctic Transit Mission, ICEX Workup and Training, Ice Camp								5.520	5.343	5.379		
								0	0	0		
FY 2011 Accomplishments: Conducted Ice Exercise (ICEX) 1-2011 mission, Arctic transit missions, ICEX workups, ICEX training, and Ice Camp. Provided planning and logistics, and support Ice Camp operations and Scientific Ice Exercises (SCICEX) accommodations. Supported Arctic deployments, including inter-Fleet transfers, as required by the Submarine Force Commanders. Investigated, researched, developed and deployed new systems for Arctic submarine support. Supported testing and tactical development required to improve submarine Arctic operability and warfighting. Coordinated and provided technical and logistical support for the Ice Camp in the Arctic Ocean.								Articles:				
FY 2012 Plans: Provide planning and support for upcoming ICEX mission 1-2014 and SCICEX accommodations. Support Arctic deployments, including inter-Fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic operability and warfighting. Convert Submarine Arctic TEMPALTs from study design to mission/tactical grade on SSN 21 Class Submarines. Complete Fleet demonstration efforts on new Edgetech 2200 Side Scan system on SSN 774 Class Submarines.												
FY 2013 Plans: Provide planning and support for upcoming ICEX mission 1-2014 and SCICEX accommodations. Support Arctic deployments, including inter-Fleet transfers, as required by the Submarine Force Commanders. Investigate, research, develop and deploy new systems for Arctic submarine support. Support testing and tactical development required to improve submarine Arctic												

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Navy		<b>DATE:</b> February 2012	
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>	
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2011</b>	<b>FY 2012</b>
operability and warfighting. Convert Submarine Arctic TEMPALTs from study design to mission/tactical grade on SSN 688/688I Class Submarines. Complete Fleet demonstration efforts on new Edgetech 2200 Side Scan system on SSN 688/688I Class Submarines.			
<b>Accomplishments/Planned Programs Subtotals</b>		5.520	5.343
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A			
<b>D. Acquisition Strategy</b> Use sole source and competitively awarded contracts through the Fleet Industrial Supply Center (FISC) regional contracting office for equipment and technical services. NAVSEA University Affiliated Research Center (UARC) omnibus contract will be used for procurement of logistics support for Ice Camps.			
<b>E. Performance Metrics</b> - Complete ICEX workup in preparation for the ICEX (at-sea) mission. - Participate in SCICEX accommodation planning for Arctic Ice Camp.			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy										DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)				R-1 ITEM NOMENCLATURE PE 0603562N: Submarine Tactical Warfare Sys				PROJECT 1739: Submarine Arctic W/F Development					
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	WR	COMSUBPAC:CA	22.627	5.239	Dec 2011	2.804	Nov 2012	-		2.804	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	UW/APL:WA	6.828	-		2.500	Dec 2012	-		2.500	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NUWC/Newport:RI	0.235	-		-		-		-	0.000	0.235	0.235
Subtotal			29.690	5.239		5.304		-		5.304			
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	C/CPAF	EG&G:VA	0.311	-		-		-		-	0.000	0.311	0.311
Program Management Support	C/CPAF	BAE SYSTEMS:MD	0.784	0.104	Feb 2012	0.075	Dec 2012	-		0.075	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA PEO IWS 5:Washington, DC	0.040	-		-		-		-	0.000	0.040	Continuing
Subtotal			1.135	0.104		0.075		-		0.075			
			Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			30.825	5.343		5.379		-		5.379			
Remarks													

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>
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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Navy			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	<b>PROJECT</b> 1739: <i>Submarine Arctic W/F Development</i>	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1739</b>				
Arctic Deployment (at Sea) - A Submarine Deployment as required by the submarine Type Commander: Arctic Deployment (at Sea)	1	2011	4	2017
ICEX Mission (at Sea) - A Submarine Ice Exercise operation to improve the Navy's understanding of the Arctic: ICEX Mission (at Sea)	1	2011	4	2011
ICEX Mission (at Sea) - A Submarine Ice Exercise operation to improve the Navy's understanding of the Arctic: ICEX Mission (at Sea) 1	1	2014	4	2014
ICEX Mission (at Sea) - A Submarine Ice Exercise operation to improve the Navy's understanding of the Arctic: ICEX Mission (at Sea) 2	1	2016	4	2016
Arctic Transit Mission (at Sea) - An operation in support of the Navy's need to "surge" a submarine from the Atlantic to the Pacific (or vice versa) via the Arctic: Arctic Transit Mission (at Sea)	1	2011	4	2017
Arctic Workup (at Sea) - A short underway period conducted in the submarine's local operating areas prior to embarking on an Arctic, mission, deployment, or ICEX: Arctic Workup (at Sea)	1	2011	4	2017
Arctic Training - Provides classroom training to the ship's watchstanders by the Ice pilot(s) to practice under-ice shiphandling: Arctic Training	1	2011	4	2017
ICE Camp (Arctic Ocean) - A remote field station set up in the Arctic to conduct submarine operational and tactical testing: ICE Camp (Arctic Ocean) 1	1	2014	4	2014
ICE Camp (Arctic Ocean) - A remote field station set up in the Arctic to conduct submarine operational and tactical testing: ICE Camp (Arctic Ocean) 2	1	2016	4	2016
ICE Camp (Arctic Ocean) - A remote field station set up in the Arctic to conduct submarine operational and tactical testing: ICE Camp (Arctic Ocean)	1	2011	4	2011
SCICEX Accommodation (at Sea) - Support scientific understanding of the Arctic Ocean: SCICEX Accommodation	1	2011	4	2011

**UNCLASSIFIED**

Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy				DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 ITEM NOMENCLATURE PE 0603562N: Submarine Tactical Warfare Sys		PROJECT 1739: Submarine Arctic W/F Development	
		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
SCICEX Accommodation (at Sea) - Support scientific understanding of the Arctic Ocean: SCICEX Accommodation 1		1	2014	4	2014
SCICEX Accommodation (at Sea) - Support scientific understanding of the Arctic Ocean: SCICEX Accommodation 2		1	2016	4	2016