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

APPROPRIATION/BUDGET ACTIVITY				R-1 ITEM NOMENCLATURE							
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603562N: <i>Submarine Tactical Warfare Sys</i>							
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	10.869	5.590	9.253	-	9.253	9.444	9.618	9.832	10.018	Continuing	Continuing
0770: <i>Adv Sub Supp Equip Prog</i>	4.356	-	3.910	-	3.910	4.030	4.077	4.169	4.253	Continuing	Continuing
1739: <i>Submarine Arctic W/F Development</i>	5.716	5.590	5.343	-	5.343	5.414	5.541	5.663	5.765	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797

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 radar range finding (e.g., PATRIOT) 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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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 0603562N: <i>Submarine Tactical Warfare Sys</i>
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B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	12.520	5.590	5.697	-	5.697
Current President's Budget	10.869	5.590	9.253	-	9.253
Total Adjustments	-1.651	-	3.556	-	3.556
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.058	-			
• Program Adjustments	-	-	3.566	-	3.566
• Rate/Misc Adjustments	-	-	-0.010	-	-0.010
• Congressional General Reductions Adjustments	0.007	-	-	-	-
• Congressional Add Adjustments	-1.600	-	-	-	-

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

Congressional Add: *Submarine Panoramic Awareness System Program*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	FY 2010	FY 2011
	0.797	-
	0.797	-
	0.797	-

Change Summary Explanation

Schedule: Not applicable.

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

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1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>				PE 0603562N: <i>Submarine Tactical Warfare Sys</i>				0770: <i>Adv Sub Supp Equip Prog</i>			
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>	4.356	-	3.910	-	3.910	4.030	4.077	4.169	4.253	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 PATRIOT LPI radar range finding and 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, Advanced Head Window Water Shedding, Electro-Optic/Infrared Vulnerability Reduction, and a Low Cost, Multi-Spectral, Grade A Head Window and Mast Signature Reduction. The Advanced Electronic Warfare Support (ES) Development projects include the development of: PATRIOT Phase B - Low Probability of Intercept (LPI) Radar, Distant ES Support and Remote Log-In, Rapid Reprogram Threat Library, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool.

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
Title: Advanced Imaging Project Development	2.584	-	2.704
Articles:	0		0
FY 2010 Accomplishments: Continuing 360 Degree Imaging (JPL) - Far Term Advanced System Continuing 360 Degree Submarine Panoramic Mid-Wave Infra-Red (MWIR) Imaging System Continuing Advanced Head Window Water Shedding			

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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 0603562N: <i>Submarine Tactical Warfare Sys</i>	PROJECT 0770: <i>Adv Sub Supp Equip Prog</i>		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
Continuing Low Cost, Multi-Spectral Grade A Head Window Continuing Mast Signature Reduction FY 2012 Plans: 360 Degree Imaging (JPL) - Far Term Advanced System: Spiral 1 Testing 360 Degree Submarine Panoramic Mid-wave Infra-Red (MWIR) Pier Side Testing Phase 1 360 Degree Imaging (ONR) - AMPP - (Demo TRL 4/5 HDTV NIR Electro-Optic/Infrared Vulnerability Signature Reduction (Update TDA) Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU) Capability Insertions (CI) - (Transition to EW - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid) Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU)				
Title: Advanced Electronic Warfare Support (ES) Project Development FY 2010 Accomplishments: Transferred to ES PATRIOT Phase B - Low Probability of Intercept (LPI) Radar Capability Insertions (CI) Continuing Distant ES Support and Remote Log-In Continuing Rapid Reprogram Threat Library Continuing ES Vulnerability Tool FY 2012 Plans: 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		Articles: 1.772 0	-	1.206 0
Accomplishments/Planned Programs Subtotals		4.356	-	3.910
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				

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	0770: <i>Adv Sub Supp Equip Prog</i>

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 0603562N: <i>Submarine Tactical Warfare Sys</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 To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development	SS/CPIF	NASA JPL:CA	7.735	-		1.344	Dec 2011	-		1.344	0.000	9.079	
Systems Engineering	WR	NUWC:RI	5.014	-		2.290	Dec 2011	-		2.290	0.000	7.304	
Primary Hardware Development	SS/CPIF	NRL:Not Specified	1.777	-		-		-		-	0.000	1.777	
Primary Hardware Development	SS/CPIF	NAWC:CA	5.769	-		-		-		-	0.000	5.769	
Subtotal			20.295	-		3.634		-		3.634	0.000	23.929	

Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Technical Services	C/CPAF	AT&T GSI:Vienna, VA	1.115	-		0.240	Feb 2012	-		0.240	0.000	1.355	
Subtotal			1.115	-		0.240		-		0.240	0.000	1.355	

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	WR	NAVSEA:WNY	0.148	-		0.036	Oct 2011	-		0.036	0.000	0.184	
Subtotal			0.148	-		0.036		-		0.036	0.000	0.184	

			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			21.558	-		3.910		-		3.910	0.000	25.468	

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 0603562N: <i>Submarine Tactical Warfare Sys</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 0603562N: <i>Submarine Tactical Warfare Sys</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 - (Concept Study)	1	2010	1	2010
360 Degree Imaging (ONR) - MWIR - (Pierside Testing Phase 1)	1	2012	1	2012
360 Degree Imaging (ONR) - MWIR - (Lab Demo Phase 2)	3	2014	3	2014
360 Degree Imaging (JPL) High Resolution (Spiral 1 S/W Demo)	3	2010	3	2010
360 Degree Imaging (JPL) High Resolution (Spiral 2 S/W CDR)	2	2013	2	2013
360 Degree Imaging (JPL) High Resolution (Spiral 2 Lab Demo)	3	2014	3	2014
360 Degree Imaging (JPL) High Resolution (Spiral 2 Pierside Testing)	1	2015	1	2015
360 Degree Imaging (JPL) High Resolution (Spiral 3 Study)	2	2015	2	2015
360 Degree Imaging (JPL) High Resolution (Spiral 3 CDR)	3	2016	3	2016
360 Degree Imaging (ONR) - AMPP - (Demo TRL 4/5 HDTV NIR)	3	2012	3	2012
360 Degree Imaging (ONR) - AMPP - (Demo TRL 6/7 HDTV NIR)	3	2013	3	2013
360 Degree Imaging (ONR) - AMPP - (Demo TRL 7/8 HDTV NIR)	3	2014	3	2014
360 Degree Imaging (ONR) - AMPP - (Lab Demo Complete Periscope)	3	2015	3	2015
360 Degree Imaging (ONR) - AMPP - (Pierside Testing)	3	2016	3	2016
Head Window Water Shedding (At-Sea Testing)	1	2010	1	2010
Low Cost, Multi-Spectral, Grade A, Head Window - (Lab Testing)	1	2010	1	2010
Electro-Optic/Infrared Vulnerability Signature Reduction (V&V Hardbody/Wake Models/ Studies)	1	2010	1	2010
Electro-Optic/Infrared Vulnerability Signature Reduction (Update TDA)	2	2012	2	2012
Electro-Optic/Infrared Vulnerability Signature Reduction (Update 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

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
PATRIOT B (EDM)	1	2010	1	2010
PATRIOT (Transition to EW)	2	2010	2	2010
Capability Insertions (CI) - (Develop - 1 Remote Log-in/Operation)	1	2010	1	2010
Capability Insertions (CI) - (Develop - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid)	2	2010	2	2010
Capability Insertions (CI) - (Transition to EW - 2&3 Rapid Reprogramming Threat Library and Tactical Decision Aid)	2	2012	2	2012
Capability Insertions (CI) - (Develop - 4 Integrated ES/ECS RFDU)	3	2012	3	2012
Capability Insertions (CI) - (At-Sea Test - 4 Integrated ES/ECS RFDU)	1	2014	1	2014
Capability Insertions (CI) - (Transition to EW - 4 Integrated ES/ECS RFDU)	4	2014	4	2014
Capability Insertions (CI) - (Develop - 5 Specific Emitter Identification)	2	2014	2	2014
Capability Insertions (CI) - (At-Sea Test - 5 Specific Emitter Identification)	1	2016	1	2016
Capability Insertions (CI) - (Develop - 6 MMM Payload)	2	2015	2	2015
Capability Insertions (CI) - (Develop - 7 LPI DF)	2	2016	2	2016

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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
1739: <i>Submarine Arctic W/F Development</i>	5.716	5.590	5.343	-	5.343	5.414	5.541	5.663	5.765	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 2010	FY 2011	FY 2012
Title: Conduct ICEX and Arctic Transit Mission, ICEX Workup and Training, Ice Camp	5.716	5.590	5.343
Articles:	0	0	0
FY 2010 Accomplishments: Conducted Ice Exercises (ICEX) mission, Arctic transit mission, ICEX workup and ICEX training. 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.			
FY 2011 Plans: Conduct ICEX missions, Arctic transit missions, ICEX workups, ICEX training, and Ice Camp. Provide planning and logistics, and support Ice Camp operations and Scientific Ice Exercises (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. Coordinate and provide technical and logistical support for the Ice Camp in the Arctic Ocean.			
FY 2012 Plans: Provide planning and support for upcoming ICEX missions, Ice Camp operations 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.			
Accomplishments/Planned Programs Subtotals	5.716	5.590	5.343

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Exhibit R-2A, RDT&E Project Justification: PB 2012 Navy		DATE: February 2011
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C. Other Program Funding Summary (\$ in Millions)

N/A

D. Acquisition Strategy

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.

E. Performance Metrics

- 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 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 0603562N: <i>Submarine Tactical Warfare Sys</i>	PROJECT 1739: <i>Submarine Arctic W/F Development</i>
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Test and Evaluation (\$ 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
Developmental Test & Evaluation	WR	COMSUBPAC:CA	18.447	4.250	Oct 2010	4.039	Oct 2011	-		4.039	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	UW/APL:WA	5.628	1.200	Jan 2011	1.200	Dec 2011	-		1.200	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NUWC/Newport:RI	0.235	-		-		-		-	0.000	0.235	0.235
Subtotal			24.310	5.450		5.239		-		5.239			

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
Program Management Support	C/CPAF	EG&G:VA	0.311	-		-		-		-	0.000	0.311	0.311
Program Management Support	C/CPAF	BAE SYSTEMS:MD	0.644	0.140	Feb 2011	0.104	Dec 2011	-		0.104	Continuing	Continuing	Continuing
Travel	Allot	NAVSEA PEO IWS 5:Washington, DC	0.040	-		-		-		-	0.000	0.040	Continuing
Subtotal			0.995	0.140		0.104		-		0.104			

	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		25.305	5.590		5.343		-	5.343			

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 0603562N: <i>Submarine Tactical Warfare Sys</i>	PROJECT 1739: <i>Submarine Arctic W/F Development</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 0603562N: <i>Submarine Tactical Warfare Sys</i>	PROJECT 1739: <i>Submarine Arctic W/F Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 1739</i>				
ICEX Mission (at Sea)	1	2010	4	2016
Arctic Transit Mission (at Sea)	1	2010	4	2016
ICEX Workup (at Sea)	1	2010	4	2016
ICEX Training	1	2010	4	2016
ICE Camp (Arctic Ocean)	1	2011	4	2016
SCICEX Accommodation	1	2011	4	2016

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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
9999: <i>Congressional Adds</i>	0.797	-	-	-	-	-	-	-	-	0.000	0.797
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 submarine capabilities to improve safety of ship, survivability, and operational effectiveness in the increasingly dense littoral environment encountered by submarines prosecuting special missions in the Global War on Terrorism (GWOT). Improvements are necessary for operational effectiveness in the following mission areas: Joint Littoral Warfare, Joint Surveillance, Space and Electronic Warfare, Intelligence Collection, Maritime Protection, and Joint Strike. The ASSEP program is currently investigating means to improve effectiveness in these areas and is pursuing the development of a 360 degree imaging system. In order to maximize the availability of this type of system to the fleet as well as providing an increased number of available, enhanced capability systems for consideration and future competitive procurement, additional investigation into the development of an initial capability Engineering Development Model (EDM) as well as the investigation into alternate enhanced capability technologies for long term solutions is required. In addition to this requirement, there is a need to extend the Intelligence, Surveillance, Reconnaissance, and Targeting (ISRT) reach of the submarine conducting these missions to points over the horizon. In order to achieve this end the ASSEP program is investigating potential means of providing a stealthy launch of Unmanned Aerial Systems (UAS) to conduct these needed ISRT tasks.

All programs funded in this project are non-acquisition category programs. Program plans and priorities are established by N87. The test articles identified consist of critical components that will be fully developed during engineering development into EDMs.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2010	FY 2011
Congressional Add: Submarine Panoramic Awareness System Program	0.797	-
FY 2010 Accomplishments: N/A		
Congressional Adds Subtotals	0.797	-

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, Serial N77/3U629205, dated 01 Apr 03, and Serial N77/1U651534, dated 30 Oct 01, COMSUBLANT/COMSUBPAC Command Capability Issues (CCIs), Virginia Class SSN Operational Requirements Document objectives, a review, assessment and prioritization of Sensor and Processor efforts and SSN force level projections for SSN688/688I, SSN21, and SSN 774 classes through FY15. Project efforts develop submarine unique improvements to mast, periscope, and ES electromagnetic and electro-optic sensors based on emerging technologies that are available

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

APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	PROJECT
1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 4: <i>Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603562N: <i>Submarine Tactical Warfare Sys</i>	9999: <i>Congressional Adds</i>

from DOD Exploratory Development Programs, industry Independent Research and Development, and other sources. Feasibility Demonstration Models (FDMs) will be developed to provide a realistic method of evaluating the improvements, including deployment on submarines for testing.

E. Performance Metrics

Congressional Adds