Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy										DATE: February 2010	
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*				R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*							
COST ($ in Millions)	**FY 2009 Actual**	**FY 2010 Estimate**	**FY 2011 Base Estimate**	**FY 2011 OCO Estimate**	**FY 2011 Total Estimate**	**FY 2012 Estimate**	**FY 2013 Estimate**	**FY 2014 Estimate**	**FY 2015 Estimate**	**Cost To Complete**	**Total Cost**
Total Program Element	13.749	12.520	5.590	0.000	5.590	5.697	5.799	5.931	6.052	Continuing	Continuing
0770: *Adv Sub Supp Equip Prog*	4.349	4.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	44.907
1739: *Submarine Arctic W/F Development*	5.809	5.774	5.590	0.000	5.590	5.697	5.799	5.931	6.052	Continuing	Continuing
9999: *Congressional Adds*	3.591	2.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.000

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 (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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy	DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603562N: *Submarine Tactical Warfare Sys*

B. Program Change Summary ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Previous President's Budget	13.767	10.172	0.000	0.000	0.000
Current President's Budget	13.749	12.520	5.590	0.000	5.590
Total Adjustments	-0.018	2.348	5.590	0.000	5.590
• Congressional General Reductions		-0.052			
• Congressional Directed Reductions		0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds		2.400			
• Congressional Directed Transfers		0.000			
• Reprogrammings	-0.007	0.000			
• SBIR/STTR Transfer	-0.011	0.000			
• Program Adjustments	0.000	0.000	5.590	0.000	5.590

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2009	FY 2010
Project: 9999: *Congressional Adds*		
Congressional Add: *High Torque, Low Speed, Direct Drive Electric Motor Technology*	0.000	1.593
Congressional Add: *HIGH AWARNESS LITORAL OBSERVING (HALO) SENSOR*	1.197	0.000
Congressional Add: *Common Architecture Imaging System (CAIS) Program*	0.798	0.000
Congressional Add: *Submarine Panoramic Awarness System Program*	1.596	0.797
Congressional Add Subtotals for Project: 9999	3.591	2.390
Congressional Add Totals for all Projects	3.591	2.390

Change Summary Explanation

Schedule: Not applicable.

FY11 from previous President's Budget is shown as zero because no FY11-15 data was presented in President's Budget 2010.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 0770: *Adv Sub Supp Equip Prog*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
0770: *Adv Sub Supp Equip Prog*	4.349	4.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	44.907
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 need to support specialized missions 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 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 DOD Exploratory Development Programs, industry Independent Research and Development, academia and other sources. Feasibility Demonstration Models (FDMs) 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), Low Cost Expendable Sensor (LCES), Advanced Head Window Water Shedding, Electro-Optic Diploops, and a Low Cost, Multi-Spectral, Grade A Head Window. The Advanced Electronic Warfare Support (ES) Development projects include the development of: PATRIOT Phase B - Low Probability of Intercept (LPI) Radar, LPI Direction Finding (DF), Distant ES Support and Remote Log-In, Specific Emitter Identification (SEI) Improvements, ES Vulnerability Tool, Integrated ES and ECS Radio Frequency Distribution Unit (RFDU), Multi-function Modular Mast (MMM) Payloads, Mast Signature Reduction, and PATRIOT Non-Scanning LPI Radar.

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 Engineering Development Models (EDMs). ASSEP Programs will eventually be broken down into initial and developmental research, for both Imaging and Electronic Warfare.

ASSEP Program will become a Military Intelligence Program and under a new Program Element 0303562N beginning Fiscal Year 2011.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603562N: *Submarine Tactical Warfare Sys*	**PROJECT** 0770: *Adv Sub Supp Equip Prog*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Advanced Imaging Project Development	2.117	2.584	0.000	0.000	0.000
FY 2009 Accomplishments: 360 Degree Imaging (JPL) - Far Term Advanced System; 360 Degree Imaging (ONR T18)- Near Term System; 360 Degree Submarine Panoramic Mid-Wave Infra-Red (MWIR) Imaging System; 360 Degree Affordable Modular Panoramic Periscope (AMPP); Low Cost Expendable Sensor (LCES); Advanced Head Window Water Shedding; Electro-Optic Diploops; Low Cost, Multi-Spectral Grade A Head Window					
FY 2010 Plans: 360 Degree Imaging (JPL) - Far Term Advanced System; 360 Degree Imaging (ONR T18)- Near Term System; 360 Degree Submarine Panoramic Mid-Wave Infra-Red (MWIR) Imaging System; 360 Degree Affordable Modular Panoramic Periscope (AMPP); Low Cost Expendable Sensor (LCES); Advanced Head Window Water Shedding; Electro-Optic Diploops; Low Cost, Multi-Spectral Grade A Head Window					
Advanced Electronic Warfare Support (ES) Project Development	2.211	1.772	0.000	0.000	0.000
FY 2009 Accomplishments: PATRIOT Phase B - Low Probability of Intercept (LPI) Radar Capability Insertions (CI) - LPI Direction Finding (DF) - Distant ES Support and Remote Log-In					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 0770: *Adv Sub Supp Equip Prog*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
- Specific Emitter Identification (SEI) Improvements - ES Vulnerability Tool - Integrated ES and ECS Radio Frequency Distribution Unit (RFDU) Multi-function Modular Mast (MMM) Payloads Mast Signature Reduction PATRIOT Non-Scanning LPI Radar *FY 2010 Plans:* PATRIOT Phase B - Low Probability of Intercept (LPI) Radar Capability Insertions (CI) - LPI Direction Finding (DF) - Distant ES Support and Remote Log-In - Specific Emitter Identification (SEI) Improvements - ES Vulnerability Tool - Integrated ES and ECS Radio Frequency Distribution Unit (RFDU) Multi-function Modular Mast (MMM) Payloads Mast Signature Reduction PATRIOT Non-Scanning LPI Radar					
DAWDF *FY 2009 Accomplishments:* Defense Acquisition Workforce Development Fund	0.021	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	4.349	4.356	0.000	0.000	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 0770: *Adv Sub Supp Equip Prog*

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 FY11. Project efforts develop 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. FDMs 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.

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 1739: *Submarine Arctic W/F Development*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
1739: *Submarine Arctic W/F Development*	5.809	5.774	5.590	0.000	5.590	5.697	5.799	5.931	6.052	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 R&D programs to conduct test and evaluation in shallow water and Arctic regions.

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
Conduct ICEX and Arctic Transit Mission, ICEX Workup and Training, Ice Camp	5.781	5.774	5.590	0.000	5.590
FY 2009 Accomplishments: Conducted Ice Exercise (ICEX) mission, Arctic transit mission, ICEX workup, ICEX training, and Ice Camp. Provided planning and logistics, and supported Ice Camp Operations and Scientific Ice Expedition (SCICEX) accommodations. Supported Arctic deployments, including inter-fleet transfers, as required by the Submarine Force Commanders.					
FY 2010 Plans: Provide planning and logistics, and support 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					

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 1739: *Submarine Arctic W/F Development*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total
warfighting. Coordinate and provide technical and logistical support for the Ice Camp in the Arctic Ocean. *FY 2011 Base Plans:* Conduct ICEX mission, Arctic transit mission, ICEX workup, ICEX training, and Ice Camp. Provide planning and logistics, and support 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. Coordinate and provide technical and logistical support for the Ice Camp in the Arctic Ocean.					
DAWDF Defense Aquisition Workforce Development Fund. *FY 2009 Accomplishments:* N/A	0.028	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	5.809	5.774	5.590	0.000	5.590

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 omnibus contract will be used for procurement of logistics support for Ice Camps.

E. Performance Metrics

- Complete Ice Exercise workup in preparation for the Ice Exercise (at-sea) Mission.
- Participate in Scientific Ice Experiment accommodation planning for Arctic Ice Camp.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 1739: *Submarine Arctic W/F Development*

Test and Evaluation ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	SUBDEVRON FIVE Seattle, WA	14.276	4.434	Oct 2009	4.250	Oct 2010	0.000		4.250	Continuing	Continuing	Continuing
Developmental Test & Evaluation	C/CPFF	University of Washington/APL Seattle, WA	4.428	1.200	Jan 2010	1.200	Nov 2010	0.000		1.200	Continuing	Continuing	Continuing
Developmental Test & Evaluation	WR	NAVSEA Newport, RI	0.235	0.000		0.000		0.000		0.000	0.000	0.235	0.235
		Subtotal	18.939	5.634		5.450		0.000		5.450			

Remarks

Management Services ($ in Millions)

				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	C/CPFF	EG&G VA	0.311	0.000		0.000		0.000		0.000	0.000	0.311	0.311
Program Management Support	C/CPFF	BAE SYSTEMS MD	0.504	0.140	Jan 2010	0.140	Nov 2010	0.000		0.140	Continuing	Continuing	Continuing
Travel	WR	NAVSEA PEO IWS 5 Washington, DC	0.040	0.000		0.000		0.000		0.000	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 1739: *Submarine Arctic W/F Development*

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2010 Cost	FY 2010 Award Date	FY 2011 Base Cost	FY 2011 Base Award Date	FY 2011 OCO Cost	FY 2011 OCO Award Date	FY 2011 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
DAWDF	C/TBD	Not Specified Not Specified	0.028	0.000		0.000		0.000		0.000	0.000	0.028	0.028
		Subtotal	0.883	0.140		0.140		0.000		0.140			

Remarks

	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	19.822	5.774		5.590		0.000		5.590			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603562N: *Submarine Tactical Warfare Sys*	**PROJECT** 1739: *Submarine Arctic W/F Development*

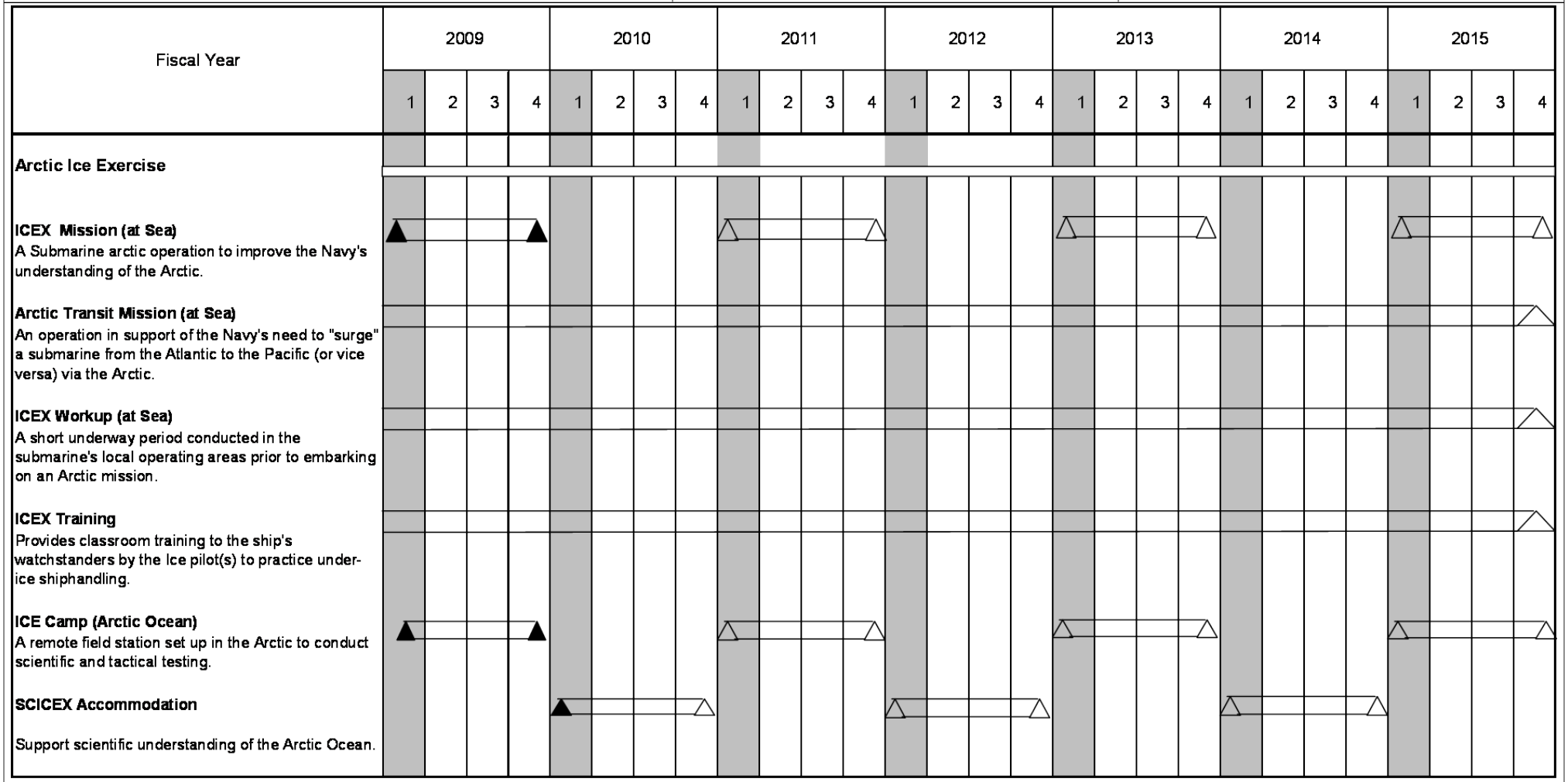

Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603562N: *Submarine Tactical Warfare Sys*	**PROJECT** 1739: *Submarine Arctic W/F Development*

Schedule Details

	Start		End	
Event	**Quarter**	**Year**	**Quarter**	**Year**
ICEX Mission (at Sea)	1	2009	4	2015
Arctic Transit Mission (at Sea)	1	2009	4	2015
ICEX Workup (at Sea)	1	2009	4	2015
ICEX Training	1	2009	4	2015
ICE Camp (Arctic Ocean)	1	2009	4	2015
SCICEX Accommodation	1	2010	4	2014

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy			DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 9999: *Congressional Adds*	

COST ($ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: *Congressional Adds*	3.591	2.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.000
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 Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: High Torque, Low Speed, Direct Drive Electric Motor Technology *FY 2010 Plans:* Procure hardware and perform Navy test and evaluation of the electric motor technology for submarine applications.	0.000	1.593
	1.197	0.000

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603562N: *Submarine Tactical Warfare Sys*	**PROJECT** 9999: *Congressional Adds*

B. Accomplishments/Planned Program ($ in Millions)

	FY 2009	FY 2010
Congressional Add: HIGH AWARNESS LITORAL OBSERVING (HALO) SENSOR *FY 2009 Accomplishments:* N/A		
Congressional Add: Common Architecture Imaging System (CAIS) Program *FY 2009 Accomplishments:* N/A	0.798	0.000
Congressional Add: Submarine Panoramic Awarness System Program *FY 2009 Accomplishments:* N/A *FY 2010 Plans:* N/A	1.596	0.797
Congressional Adds Subtotals	3.591	2.390

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

Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy		DATE: February 2010
APPROPRIATION/BUDGET ACTIVITY 1319: *Research, Development, Test & Evaluation, Navy* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603562N: *Submarine Tactical Warfare Sys*	PROJECT 9999: *Congressional Adds*

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