EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **FEBRUARY 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**			UNCLASSIFIED		R-1 ITEM NOMENCLATURE 0205620N Surface ASW Combat System Integration			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**12.387**	**18.546**	**11.200**	**14.421**	**13.584**	**14.053**	**13.482**	**14.679**
0896 / AN/SQQ-89 Modifications	**1.208**	**4.766**	**4.609**	**4.691**	**4.760**	**4.865**	**5.211**	**5.313**
1916 / Surface ASW System Improvements	**11.179**	**12.784**	**6.591**	**9.730**	**8.824**	**9.188**	**8.271**	**9.366**
9999 / Congressional Adds	**0.000**	**0.996**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The objective of this Program Element (PE) is to significantly improve existing surface ship sonar system capabilities through quick and affordable development and integration of emergent transformational technologies.

Project 0896 focuses on the identification, development, test, and integration of the most promising Anti-Submarine Warfare (ASW) technologies into the AN/SQQ-89(V) Surface Undersea Warfare (USW) Combat System. This project will provide a clear transition path for emergent transformational ASW technologies to be quickly and affordably developed and incorporated into the AN/SQQ-89(V). This project will capitalize on a Rapid Technology Transition (RTT) process, enabling the aggressive pursuit of improvements to system portability, extension of interoperability with multiple platforms, and opportunity to export these capabilities Navy wide. Time phased insertion of ASW Commercial-Off-The-Shelf (COTS) improvements will address the entire combat system, including new sensor integration, acoustics, fire control, contact management, performance prediction, operator productivity, and on-board training.

Project 1916 improves AN/SQQ-89(V) Measures Of Performance (MOP) by enhancing detection, tracking, classification, active and sonobuoy data processing and display capabilities, and increasing acoustic sensor frequency bandwidth. This project will take advantage of the AN/SQQ-89(V) Open System Architecture (OSA) and Acoustic Rapid COTS Insertion (ARCI) initiatives to develop and integrate a Multi-Function Towed Array (MFTA) with active sonar bistatics (Echo Tracker Classifier - ETC), an ARCI passive ASW processor, and torpedo defense capabilities (Forward and Aft sector coverage with Wake Homer protection). This COTS-based surface USW combat system, the AN/SQQ-89A(V)15, is currently planned as a backfit program for both CG47 (CG59-73 Baseline 3 and 4) and DDG51 (DDG51-112 FLT I/II/IIA) class ships. The Open Architecture (OA) (level 3 compliant) AN/SQQ-89A(V)15 system drives the spiral development process and provides budget flexibility to make COTS/OA technology solutions and ARCI-type initiatives affordable. This will be accomplished via the incorporation of select Pre-Planned Product Improvements (P3I) and emergent, transformational ASW technologies (such as, those developed under Project 0896) delivered to the AN/SQQ-89(V) prime integrator every two to three years.

Project 1916 includes FY 2006/2007 Congressional Adds for 'Surface Ship ASW Research and Development (R&D) Improvements'. Funding will be used to continue the development of promising technologies for at-sea tests in representative war fighting environments. Project 1916 includes FY 2006 Congressional Add for 'Common Surface and Air Undersea Warfare'. Funding will be used to continue the Air and Surface Ship Peer Review Process integration approach using an OA system to develop and test a single “Best of Breed” Common Airborne Undersea Sensor Software (CAUSS) processing baseline that will be used by all USW sonobuoy communities. Project 1916 also includes FY 2006/2007 Congressional Adds for 'Surface Ship Sonar Integrated Data Fusion Initiative'. Funding will be used to support the development, test, and evaluation of an integrated sonar data fusion and display capability for Surface Ship USW Combat Systems.

Project 9A75 includes FY 2007 Congressional Add for 'Advanced Materials for Acoustic Window Applications'. Funding will be used to study the feasibility of replacing existing sonar window materials with a material that has the potential to provide a Total Ownership Cost (TOC) reduction of three (3) to five (5) times for acoustic windows used on Navy surface combatants such as the DDG 51 and DDG 1000 Class vessels, while improving mission readiness and acoustic performance.

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2006	FY 2007	FY 2008	FY 2009
FY 2007 President's Budget	12.751	9.417	9.849	10.015
FY 2008 President's Budget	12.387	18.546	11.200	14.421
Total Adjustments	-0.364	9.129	1.351	4.406
Undist. General/Cong. Adjustments	-0.121	-0.071		
Realignment			3.000	3.000
SBIR/STTR Transfer	-0.243			
Congressional adds		9.200		
Pricing Adjustments				0.005
Program Adjustments			-1.649	1.401
Subtotal	-0.364	9.129	1.351	4.406

Schedule: Not Applicable

Technical: Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **FEBRUARY 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**	PROGRAM ELEMENT NUMBER AND NAME 0205620N Surface ASW Combat System Integration				PROJECT NUMBER AND NAME 0896 AN/SQQ-89 Modifications			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**1.208**	**4.766**	**4.609**	**4.691**	**4.760**	**4.865**	**5.211**	**5.313**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The AN/SQQ-89 Modifications Project will focus on the identification, development, test, integration and delivery of the most promising ASW technologies to the AN/SQQ-89(V) Surface USW Combat System. This project will provide a clear transition path for emergent transformational ASW technologies (i.e., through ASW Cross Functional Board (formerly known as Task Force ASW) initiatives) to be quickly and affordably developed and incorporated. This project will capitalize on a RTT process, enabling the aggressive pursuit of improvements to system portability, extension of interoperability with multiple platforms, and opportunity to export these capabilities Navy wide. Time phased insertion of ASW COTS improvements will address the entire combat system, including new sensor integration, acoustics, fire control, contact management, performance prediction, operator productivity, and on-board training.

This project will take technologies developed by Program Executive Office for Integrated Warfare Systems, Undersea Systems Program Office (PEO IWS 5), Office of Naval Research (ONR), Defense Advanced Research Planning Agency (DARPA), and the Oceanographer of the Navy, that achieve significant improvements in ASW effectiveness and integrate them into the AN/SQQ-89(V) Surface USW Combat System. The following improvements have been considered in the near term: develop and integrate the Low Frequency Array's (LFA) low frequency coherent multi-static processing capability for the AN/SQR-19 towed array group; leverage ARCI's Sparsely Populated Volumetric Array (SPVA) technology to increase bandwidth and incorporate acoustic intercept capability for the surface community; develop a Data Fusion capability that will integrate ASW, radar and other non-acoustic sensors into an integrated display environment; develop Marine Mammal Detection and Mitigation (MMDM) enhancements; and develop an effective and affordable underwater Acoustic Communications (ACOMMS) system for seamless communications between ASW platforms. Additional improvements will be developed and integrated as new, promising technologies are identified.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	0896 AN/SQQ-89 Modifications

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Identification, Development and Integration of ASW Technologies Into adjunct AN/SQQ-89(V) Surface USW Combat Systems	1.208	4.516	4.359	4.441
RDT&E Articles Quantity				

FY06-09: Identify technologies developed by PEO IWS 5, ONR, DARPA, and the Oceanographer of the Navy that may achieve significant improvements in ASW effectiveness if integrated into the AN/SQQ-89(V) Surface USW Combat System. Selected promising technologies will be sufficiently integrated into adjunct systems installed in the AN/SQQ-89(V), such as the Improved Performance Sonar (IPS) and Scaled Improved Performance Sonar (SIPS), so that at-sea tests can be conducted and performance assessed. Integration of successful technologies will be completed for installation on CG47, DDG51, and FFG7 class ships as part of SIPS software updates. Successful software improvements will also be passed on to the AN/SQQ-89(V) prime integrator as part of the spiral development build process under Project 1916, for fielding in the OSA AN/SQQ-89A(V)15 USW Combat System that is being installed on CGs 59-73 and DDGs 51-112.

	FY 06	FY 07	FY 08	FY 09
At-Sea Testing of Select ASW Technologies	0.000	0.250	0.250	0.250
RDT&E Articles Quantity				

FY07-09: Coordinate and conduct at-sea test of select emergent, significant ASW technologies on ships equipped with AN/SQQ-89(V) adjunct IPS and SIPS systems. Assess results.

RDT&E Articles Quantity				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	0896 AN/SQQ-89 Modifications

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI 2136/ AN/SQQ-89 Surface ASW Combat System	37.3	37.6	25.4	74.0	122.9	99.7	108.9	102.9	Continuing	Continuing

Related RDT&EN: PE 0205620N/ Surface ASW System Improvement Project 1916, PE 0603553N/ Surface ASW Project 1704

D. ACQUISITION STRATEGY:

- Identify and test promising evolutionary and transformational technologies via incorporation on adjunct IPS and SIPS systems; and deliver successful technologies in the form of software updates to AN/SQQ-89(V) prime system integrator for integration into the AN/SQQ-89A(V)15 USW Combat System via spiral development build process.
- Award new, competitive contract for AN/SQQ-89(V) prime system integrator in FY 2007.

E. MAJOR PERFORMERS:

- Advanced Acoustic Concepts (AAC), NY - Small Business inivative Research (SBIR) Phase III contract for common acoustic processor, acoustic intercept, and prime contractor for adjunct AN/SQQ-89(V) IPS and SIPS programs.
- Adaptive Methods (AM), MD - SBIR Phase III contract for engineering services in support of hardware/software integration, and test of advanced sensor interfaces and sensor processing improvements including Data Fusion (DF), Adaptive Beamforming (ABF), and Calibrated Reference Hydrophone (CRH) sensor interface.
- Johns Hopkins University Applied Physics Laboratory (JHU/APL), MD - Development of emerging active sonar technologies.
- Naval Sea Systems Command, Newport, RI - AN/SQQ-89(V) Technical Design Agent support.
- University of Texas Applied Research Laboratory (UT/ARL), TX - Sonar Performance Prediction Functional Segment (SPPFS) software development.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)						DATE: **FEBRUARY 2007**								
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**		PROGRAM ELEMENT 0205620N Surface ASW Combat System Integration			PROJECT NUMBER AND NAME 0896 AN/SQQ-89 Modifications									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
S/W Development/Test/Integration	C/CPFF	AAC, NY	0.000			0.551	01/07	0.450	11/07	0.450	11/08	Continuing	Continuing	
S/W Development/Test/Integration	C/CPFF	AM, MD	0.000	0.253	03/06	3.033	01/07	3.000	11/07	3.000	11/08	Continuing	Continuing	
S/W Development/Test/Integration	C/CPFF	JHU/APL, MD	0.000	0.606	03/06	0.260	01/07	0.289	11/07	0.310	11/08	Continuing	Continuing	
S/W Development/Test/Integration	C/CPFF	UT/ARL, TX	0.000			0.324	01/07	0.300	11/07	0.301	11/08	Continuing	Continuing	
S/W Development/Test/Support	Var.	Var.	0.000	0.349	02/06	0.348	01/07	0.320	10/07	0.380	10/08	Continuing	Continuing	
Subtotal Product Development			0.000	1.208		4.516		4.359		4.441		Continuing	Continuing	
Remarks:														
Subtotal Support			0.000	0.000		0.000		0.000		0.000		0.000	0.000	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **FEBRUARY 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**		PROGRAM ELEMENT 0205620N Surface ASW Combat System Integration			PROJECT NUMBER AND NAME 0896 AN/SQQ-89 Modifications									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Test and Evaluation	WX	NAVSEA/NEWPORT, RI	0.000			0.250	01/07	0.250	10/06	0.250	10/06	Continuing	Continuing	
Subtotal Test & Evaluation			0.000	0.000		0.250		0.250		0.250		Continuing	Continuing	
Remarks:														
Subtotal Management			0.000	0.000		0.000		0.000		0.000		Continuing	Continuing	
Remarks:														
Total Cost			0.000	1.208		4.766		4.609		4.691		Continuing	Continuing	
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **FEBRUARY 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-07**

PROGRAM ELEMENT NUMBER AND NAME: 0205620N Surface ASW Combat System Integration

PROJECT NUMBER AND NAME: 0896 AN/SQQ-89 Modifications

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition/Contract Milestones/Reviews						△ New Contract Award - AN/SQQ-89(V) Prime System Integrator																										
Identification of Promising ASW Technologies for Test on SQQ-89(V) Adjunct Systems		■	■	■	■	■																										
Select Technologies for Test on SQQ-89(V) Adjunct Systems					■	■																										
Integration of Select Technologies Into Adjunct SQQ-89(V) Systems for At-Sea Test							△				△				△				△				△				△				△	
Complete Integration of Successful Technologies for Installation via S/W Upgrades on Adjuncts and SQQ-89A(V)15										△				△				△				△				△				△	
Test & Evaluation Milestones At-Sea Test and Evaluation of Select Technologies on SQQ-89(V) Adjunct Systems								▭				▭				▭				▭				▭				▭				▭
Production Milestones Production S/W Upgrade Delivery to Adjunct SQQ-89(V) SIPS Backfit Program (OPN BLI 2136)										△				△				△				△				△				△		
Production S/W Upgrade Delivery to SQQ-89A(V)15 Spiral Development Build Program (RDT&E,N PE 0205620N, Project 1916)														△				△				△				△				△		

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **FEBRUARY 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**	PROGRAM ELEMENT 0205620N Surface ASW Combat System Integration				PROJECT NUMBER AND NAME 0896 AN/SQQ-89 Modifications			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
New Contract Award - AN/SQQ-89(V) Prime System Integrator		2Q						
Identification of Promising ASW Technologies	2Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Select Technologies for Test on Adjunct SQQ-89(V) Systems		1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
Integration Into Adjunct SQQ-89(V) Systems for At-Sea Test		3Q	3Q	3Q	3Q	3Q	3Q	3Q
At-Sea Test of Select Technologies on Adjunct SQQ-89(V) Systems		4Q	4Q	4Q	4Q	4Q	4Q	4Q
Complete Integration of Successful Technologies for Installation via S/W Upgrades			2Q	2Q	2Q	2Q	2Q	2Q
Production S/W Delivery to Adjunct SQQ-89(V) SIPS OPN Backfit Program			2Q	2Q	2Q	2Q	2Q	2Q
Production S/W Delivery to SQQ-89A(V)15 RDT&E,N Spiral Development Build Program				2Q	2Q	2Q	2Q	2Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **FEBRUARY 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**	PROGRAM ELEMENT NUMBER AND NAME 0205620N Surface ASW Combat System Integration				PROJECT NUMBER AND NAME 1916 Surface ASW Systems Improvements			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**11.179**	**12.784**	**6.591**	**9.730**	**8.824**	**9.188**	**8.271**	**9.366**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Surface ASW Systems Improvements Project will support essential performance enhancements to AN/SQQ-89(V) and Surface Ship Sonar Systems. This project will improve AN/SQQ-89(V) MOP by enhancing detection, tracking, classification, active and sonobuoy data processing and display capabilities, and increasing acoustic sensor frequency bandwidth.

This project will take advantage of the AN/SQQ-89(V) OSA and ARCI initiatives to develop and integrate a MFTA with active sonar bistatics (ETC), an ARCI passive ASW processor, and torpedo defense capabilities (Forward and Aft sector coverage with Wake Homer protection). This COTS-based Surface USW combat system, the AN/SQQ-89A(V)15, is currently planned as a backfit program for both CG47 (CG59-73 Baseline 3 and 4) and DDG51 (DDG51-112 FLTI/II/IIA) class ships. This project has delivered the AN/SQQ-89A(V)15 Build 0 Pre-Production Prototype, performed installation on board CG73, and conducted subsequent Developmental Test & Evaluation (DT&E) and Initial Operational Test & Evaluation (IOT&E) where the system was found 'Operationally Effective' by Command Operational Test and Evaluation Force (COMOPTEVFOR).

The OSA and high performance COTS processing hardware on ships fielded with the AN/SQQ-89A(V)15 combat system provides an opportunity to integrate select P3I as well as emergent, transformational ASW technological improvements (as developed under Project 0896) that were previously unachievable. The USW suites on these ships will require periodic upgrades to remain effective well into the 21st century. To achieve this, this project will package and deliver incremental upgrades every two years to the AN/SQQ-89A(V)15 production program via a spiral development build process by inserting maturing USW technologies, such as enhancements to improve USW performance in the littoral, and via reduced manning on AN/SQQ-89(V) equipped ships, active classification sonar upgrades, marine mammal detection and mitigation, Multi-Static Active ASW, Multi-Frequency Acoustic Communications (MF ACOMMS) between Surface Combatants and Submarines, new RAPTOR radar processing, and upgraded technologies such as algorithm improvements, increased Passive Narrow Band (PNB) frequency, improved Extended Echo Ranging (EER), and beamformer improvements. A rigorous testing program is also required to ensure that these performance enhancements are operationally effective and suitable.

Project 1916 includes a realignment of the Surface Ship Enhanced Measurement Program (SSEMP) from PE 0603553N, Project 1704, beginning in FY 2008. SSEMP measures the performance of existing and new Surface Ship ASW combat systems and enables data based assessment of the capabilities and shortfalls in the performance of these systems in realistic scenarios.

Project 1916 includes FY 2006/2007 Congressional Adds for 'Surface Ship ASW R&D Improvements'. Funding will be used to continue the development of promising technologies for at-sea tests in representative war fighting environments. Project 1916 also includes an FY 2006 Congressional Add for 'Common Surface and Air Undersea Warfare'. Funding will be used to continue the Air and Surface Ship Peer Review Process integration approach using an OA system to develop and test a single “Best of Breed” CAUSS processing baseline, that will be used by all USW sonobuoy communities. Project 1916 includes FY 2006/2007 Congressional Adds for 'Surface Ship Sonar Integrated Data Fusion Initiative'. Funding will be used to support the development, test, and evaluation of an integrated sonar data fusion and display capability for Surface Ship USW Combat Systems.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	1916 Surface ASW Systems Improvements

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Surface Ship ASW R&D Improvements	3.915	6.369	0.000	0.000
RDT&E Articles Quantity				

FY06-07: (Congressional Add) Continue the development of Surface Ship ASW improvements that increase capability in passive/active sonar detection and in own ship torpedo self defense. This is through use of portable, modular software to ease transition to new families of COTS hardware, and the low cost incorporation of improved processing algorithms. This program addressed critical surface sonar capability shortfalls, such as: passive/active ASW in difficult littoral areas, torpedo defense detection and response times in all areas, and automation technology for reduced manning. Funding addressed these shortfalls by using the Advanced Processing Builds (APB) model that has rapidly delivered transformational modernization through exploitation of application reuse and low cost incorporation of improved processing algorithms.

	FY 06	FY 07	FY 08	FY 09
Common Surface and Air Undersea Warfare	2.055	0.000	0.000	0.000
RDT&E Articles Quantity				

FY06: (Congressional Add) Continued the Air and Surface Ship IPS Multi Processor Interconnect (MPI) technology transition process using an OA baseline, developed common technology innovations into the Air and Surface USW communities that provided generational improvements to offboard processing and integrated decision-making, provided technology transition of the common capabilities into the Littoral Combat Ship (LCS), DDX, SIPS, P-3C, SH-60R, Multi-Mission Aircraft (MMA) and warfighting communities, and used this developed technology to demonstrate a common Air USW Mission Module for LCS.

	FY 06	FY 07	FY 08	FY 09
Surface Ship Sonar Integrated Data Fusion Init.	2.078	1.800	0.000	0.000
RDT&E Articles Quantity				

FY06-07: (Congressional Add) Develop software to consolidate the display of all surface combatant sonar contacts at a single multi-modal analysis workstation and automatically developed fused target motion solutions for threat assessment and engagement.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	1916 Surface ASW Systems Improvements

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
AN/SQQ-89(V) Test & Evaluation Program	0.201	0.450	0.450	0.450
RDT&E Articles Quantity				

FY06-09: Providing AN/SQQ-89(V) test and evaluation planning support, System Assessment Team (SAT) analysis, update Test & Evaluation Master Plan (TEMP) to reflect AN/SQQ-89A(V)15 spiral development build program, coordinate and conduct roll-on roll-off tests of AN/SQQ-89(V) systems, provide performance data and environmental analysis, Independent Verification & Validation (IV&V), and modeling and simulation using MOP and Measures Of Effectiveness (MOE) methods

	FY 06	FY 07	FY 08	FY 09
Enhancements via SQQ-89A(V)15 Spiral Development Build Process	2.930	4.165	3.141	6.280
RDT&E Articles Quantity				

FY06-09: Developing modest enhancements to the AN/SQQ-89A(V)15 OSA via the integration of transformational technologies through a spiral development process. Items include Hull-Mounted Acoustic Intercept (ACI) Sensor, ACI Performance Predictions and Signal Injection Capabilities, MMDM Capability, Hull Array Adaptive Beamformer, Towed Array Shape Compensated Beamformer Mid-Frequency Active Cooperative Organic Mine Defense (COMID) Mine Avoidance Upgrades, Mid-Frequency Active Rapid Replay and Multi-Waveform Tracker, Hull Passive Functional Segment, Full Bandwidth Towed Array Passive ASW and Torpedo Detection Automated Detection, Classification and Localization (DCL) Improvements (active/passive), New Sensor Data Fusion Functional Segment to reduce the number of displays required for system operation, Multi-Frequency Acoustic Communications (MF ACOMMS) development, Explosive Source integration with AN/SQQ-89(V) processes, simplification of displays and active processing, incorporation of all IPS and SIPS features, and a Sonar Logger capability to significantly reduce operator data logging requirements. These items will be integrated and delivered to the CG47 and DDG51 class AN/SQQ-89A(V)15 backfit production programs. Build 1 segment software update/integration effort completes in FY06. Build 2 segment software update development begins FY06 and integration effort completes in FY08. Build 3 segment software development begins FY07 and integration effort completes in FY10. Build 4 segment software development begins FY09 and integration effort completes in FY12.

FY06-09: Resolve/troubleshoot issues/deficiencies that arise from AN/SQQ-89(V) Test & Evaluation program.

	FY 06	FY 07	FY 08	FY 09
Surf. Ship Enhanced Measurement Pgm. (SSEMP)	0.000	0.000	3.000	3.000
RDT&E Articles Quantity				

FY08-09: Measure the performance of existing and new Surface Ship ASW combat systems and enables data based assessment of the capabilities and shortfalls in the performance of these systems in realistic scenarios. Perform Fleet exercise data reconstruction and post-test analysis each year.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	1916 Surface ASW Systems Improvements

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
OPN BLI 2136/ AN/SQQ-89 Surface ASW Combat System	37.3	37.6	25.4	74.0	122.9	99.7	108.9	102.9	Continuing	Continuing

Related RDT&EN: PE 0205620N/ AN/SQQ-89 Modifications Project 0896

D. ACQUISITION STRATEGY:

Completed AN/SQQ-89A(V)15 Build 0 Pre-Production Prototype, performed installation, conducted DT&E, and Initial IOT&E 4Q FY 2005. Via spiral development build process, incorporate evolutionary and transformational technologies into AN/SQQ-89A(V)15 systems at scheduled intervals.
Award new, competitive contract for AN/SQQ-89(V) prime system integrator in 2Q FY 2007.

E. MAJOR PERFORMERS:

- AAC, NY - SBIR Phase III contract for common acoustic processor, acoustic intercept, and prime contractor for 'Common Surface and Air Undersea Warfare' FY 2006 Congressional Add provided to develop and test a single “Best of Breed” CAUSS processing baseline that will be used by all USW sonobuoy communities.
- AM, MD - SBIR Phase III contract for common acoustic processor and towed array/beamformer processing improvements to the MFTA functional segment and prime contractor for 'Surface Ship Sonar Integrated Data Fusion Initiative' FY 2006/2007 Congressional Adds.
- General Dynamics-AIS (GD-AIS, formerly DSR), VA - SBIR Phase III contract for common acoustic processor, prime contractor for 'Surface Ship ASW R&D Improvements' FY 2006/2007 Congressional Adds provided to complete the development of promising technologies for at-sea tests in representative warfighting environments.
- JHU/APL, MD - Design, development and integration of MFTA, Torpedo Detection Classification and Localization (TDCL) improvements, SSEMP participation in experiment planning, conduct, data reconstruction and post-exercise analysis.
- Lockheed Martin, NY - Prime AN/SQQ-89(V) System Integrator, Production and Design Agent.
- Naval Sea Systems Command, Newport, RI - AN/SQQ-89(V) Technical Design Agent support.
- Naval Sea Systems Command, Dahlgren, VA - AN/SQQ-89(V) Technical Design Agent support.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **FEBRUARY 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-07**

PROGRAM ELEMENT: 0205620N Surface ASW Combat System Integration

PROJECT NUMBER AND NAME: 1916 Surface ASW Systems Improvements

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
S/W Development/Integration/Test	C/CPFF	AAC, NY	12.141	2.614	12/05	0.825	01/07	0.660	11/07	1.650	11/08	Continuing	Continuing	
S/W Development/Integration/Test	C/CPFF	AM, MD	5.782	3.018	02/06	3.050	12/06	0.506	11/07	0.810	11/08	Continuing	Continuing	
S/W Development/Integration/Test	C/CPFF	GD-AIS, VA	16.326	3.196	05/06	6.369						0.000	25.891	
S/W Development/Integration/Test	C/CPFF	JHU/APL, MD	9.841	0.989	03/06	0.400	01/07	2.300	11/07	3.491	11/08	Continuing	Continuing	
S/W Development/Integration/Test	C/CPAF	LOCKHEED MARTIN, NY	63.065	0.015	02/06							0.000	63.080	
S/W Development/Integration/Test	C/CPAF	TBD, TBD (FY07 Award)	0.000			0.300	01/07	0.300	11/07	0.300	11/08	Continuing	Continuing	
S/W TDA Support	WX	NAVSEA/DAHLGREN, VA	9.320	0.205	11/05	0.200	01/07	0.200	10/07	0.200	10/08	Continuing	Continuing	
S/W TDA Support	WX	NAVSEA/NEWPORT, RI	30.013	0.367	11/05	0.400	01/07	1.000	10/07	1.200	10/08	Continuing	Continuing	
S/W Dev./Integration/Test/Support	Var.	Var.	39.463	0.000	11/05	0.207	01/07	0.583	10/07	1.028	10/08	Continuing	Continuing	
Subtotal Product Development			185.951	10.404		11.751		5.549		8.679		Continuing	Continuing	

Remarks:

Engineering & Tech. Svcs (ETS)	Var.	Var.	0.900									0.000	0.900	
Studies, Analyses & Eval. (SAE)	Var.	Var.	1.500									0.000	1.500	
Subtotal Support			2.400	0.000		0.000		0.000		0.000		0.000	2.400	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)

DATE: **FEBRUARY 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-07**

PROGRAM ELEMENT: 0205620N Surface ASW Combat System Integration

PROJECT NUMBER AND NAME: 1916 Surface ASW Systems Improvements

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Operational Test Conduct/Support	WX	COMOPTEVFOR, VA	2.659									0.000	2.659	
DT/OT Test Conduct/Support	WX	NAVSEA/NEWPORT, RI	5.681									0.000	5.681	
IV&V/SAT/TEMP Assess./Update	WX	NAVSEA/NEWPORT, RI	3.812	0.113	11/05	0.275	01/07	0.275	10/07	0.275	10/08	Continuing	Continuing	
DT/OT/Miscellaneous T&E	Var.	Var.	1.109	0.088	11/05	0.175	01/07	0.175	10/07	0.175	10/08	Continuing	Continuing	
Subtotal T&E			13.261	0.201		0.450		0.450		0.450		Continuing	Continuing	

Remarks:

Program Management Support	CPAF	BAE Systems, MD	7.632	0.424	12/05	0.433	01/07	0.442	11/07	0.451	11/08	Continuing	Continuing	
Program Office Travel	PD	NAVSEA PEO IWS5, DC	1.604	0.150	11/05	0.150	01/07	0.150	10/06	0.150	10/06	Continuing	Continuing	
Subtotal Management			9.236	0.574		0.583		0.592		0.601		Continuing	Continuing	

Remarks:

Total Cost			210.848	11.179		12.784		6.591		9.730		Continuing	Continuing	

Remarks:

EXHIBIT R4, Schedule Profile — UNCLASSIFIED — DATE: **FEBRUARY 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-07**

PROGRAM ELEMENT NUMBER AND NAME: 0205620N Surface ASW Combat System Integration

PROJECT NUMBER AND NAME: 1916 Surface ASW Systems Improvements

Fiscal Year	2006				2007				2008				2009				2010				2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition/Contract Milestones/Reviews	A(V)15 Build 0 IOC (CG73)					New Contract Award - AN/SQQ-89(V) Prime System Integrator																										
AN/SQQ-89A(V)15 Software Segment Development/ Integration /Test - **Build 1**	Integration/Test																															
AN/SQQ-89A(V)15 Software Segment Development/ Integration/Test - **Build 2**	Development				GAT	Integration/Test																										
AN/SQQ-89A(V)15 Software Segment Development/ Integration/Test - **Build 3**						Development							GAT	Integration/Test																		
AN/SQQ-89A(V)15 Software Segment Development/ Integration/Test - **Build 4**														Development							GAT	Integration/Test										
AN/SQQ-89A(V)15 Software Segment Development/ Integration/Test - **Build 5**																						Development							GAT	Integration/Test		
Test & Evaluation Milestones																																
AN/SQQ-89A(V)15 Developmental Test & Evaluation (DT&E) (Completed FY04)																																
AN/SQQ-89A(V)15 Initial Operational Test & Evaluation (IOT&E) (Completed FY05, 'Operationally Effective' per COMOTEVFOR)																																
Surface Ship Enhanced Measurement Program (SSEMP); Conduct data collection and analysis of selected exercises and real-world opportunities																																
Production Milestones																																
AN/SQQ-89A(V)15 Production Software Delivery to System Integrator via Spiral Development Process		Build 1								Build 2								Build 3								Build 4						
AN/SQQ-89A(V)15 Backfit Fielding Plans Install Start Date Shown; System # Shown in ()																																
DDG FLT IIA (OPN BLI 2136)															(1)	(2,3)		(4)			(5)	(6)	(7)	(8)	(9,10,11,12)	(13,14)	(15,16)	(17)		(18,19)	(20)	(21,22)
CG B/L 3/4 (OPN BLI 0960)																								(1)			(2,3,4)					(5,6,7)
DDG FLT I/II (OPN BLI 0900)																											(1,2)					(3,4,5)

CLASSIFICATION:

Exhibit R-4a, Schedule Detail	UNCLASSIFIED					DATE: **FEBRUARY 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-07**	PROGRAM ELEMENT 0205620N Surface ASW Combat System Integration				PROJECT NUMBER AND NAME 1916 Surface ASW Systems Improvements			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Build 0 Initial Operational Capability (IOC) (CG73)	1Q							
Build 1 S/W Segment Integration/Test	1Q							
Build 1 Production S/W Delivery to System Integrator	2Q							
Build 2 S/W Segment Development	1Q-4Q	1Q						
Build 2 S/W Segment Government Acceptance Test (GAT)		1Q						
Build 2 S/W Segment Integration/Test		2Q-4Q	1Q-2Q					
Build 2 Production S/W Delivery to System Integrator			3Q					
Build 3 S/W Segment Development		2Q-4Q	1Q-4Q	1Q				
Build 3 S/W Segment GAT				1Q				
Build 3 S/W Segment Integration/Test				2Q-4Q	1Q			
Build 3 Production S/W Delivery to System Integrator					2Q			
Build 4 S/W Segment Development				2Q-4Q	1Q-4Q	1Q		
Build 4 S/W Segment GAT						1Q		
Build 4 S/W Segment Integration/Test						2Q-4Q	1Q	
Build 4 Production S/W Delivery to System Integrator							2Q	
Build 5 S/W Segment Development						2Q-4Q	1Q-4Q	1Q
Build 5 S/W Segment GAT								1Q
Build 5 S/W Segment Integration/Test								2Q-4Q
New Contract Award - AN/SQQ-89(V) Prime System Integrator		2Q						
Surface Ship Enhanced Measurement Program (SSEMP)			1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
DDG51 Class FLT IIA Backfit Install (Ships 1,2,3)				3Q,4Q				
DDG51 Class FLT IIA Backfit Install (Ship 4)					2Q			
DDG51 Class FLT IIA Backfit Install (Ships 5,6,7,8)						1Q-4Q		
DDG51 Class FLT IIA Backfit Install (Ships 9,10,11,12,13,14,15,16)							2Q-4Q	
DDG51 Class FLT IIA Backfit Install (Ships 17,18,19,20,21,22)								1Q-4Q
CG47 Class B/L 3/4 Backfit Install (Ship 1)						4Q		
CG47 Class B/L 3/4 Backfit Install (Ship 2,3,4)							4Q	
CG47 Class B/L 3/4 Backfit Install (Ship 5,6,7)								4Q
DDG51 Class FLT I/II Backfit Install (Ship 1,2)							4Q	
DDG51 Class FLT I/II Backfit Install (Ship 3,4,5)								4Q

EXHIBIT R-2a, RDT&E Project Justification		DATE: **FEBRUARY 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-07	0205620N Surface ASW Combat System Integration	9A75 Advanced Materials for Acoustic Window Applications

CONGRESSIONAL PLUS-UPS:

	FY 06	FY 07	FY 08	FY 09
9A75 - Adv. Materials for Acoustic Window App.	0.000	0.996	0.000	0.000
RDT&E Articles Quantity				

FY07 Congressional Add: Design and build a full-scale, low-cost, advanced material AN/SQS-53C sonar dome window. Study the feasibility of replacing existing sonar window materials with a material that has the potential to provide a Total Ownership Cost (TOC) reduction of three (3) to five (5) times for acoustic windows used on Navy surface combatants such as the DDG 51 and DDG 1000 Class vessels, while improving mission readiness and acoustic performance.