CLASSIFICATION:	UNCLASSIFIED						

EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION	DATE May 2009

APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 5	R-1 ITEM NOMENCLATURE 0604518N/COMBAT INFORMATION CENTER CONVERSION

COST (In Millions)	FY 2008	FY 2009	FY 2010				
Total PE Cost	18.163	17.709	13.305				
3094 / USW Decision Support	16.616	14.717	13.305				
9999 / Congressional Add	1.547	2.992	0.000				

A. MISSION DESCRIPTION:

The objective of this Program Element (PE), under Project 3094, is to develop a net-centric Undersea Warfare Decision Support System (USW-DSS) capability to support the Theater Anti-Submarine Warfare (ASW) Commander (TASWC), Sea Combat Commander (SCC), Anti-Submarine Warfare Commander (ASWC) and the Mine Warfare Commander (MIWC). USW-DSS will primarily of computer software components that will be developed and implemented to comply with FORCEnet and Open Architecture Computing Environment (OACE) architecture standards and guidance. The resultant system will yield a single software architecture for afloat ASW Combat Command and Control (C2) that will bridge the Command, Control, Communications, Computers, & Intelligence (C4I) domain and the combat systems, to achieve the capabilities described in USW-DSS Increment 1 Capabilities Production Document (CPD). USW-DSS will provide the following integrated capabilities on board selected Carrier Strike Groups (CSGs): plan, conduct, and coordinate USW operations with multiple ASW and MIW platforms; rapidly receive and implement the directions of the SCC, respond to the actions of other assigned platforms and make inputs to the SCC and other platforms concerning the current state of the tactical situation; encompass other assets that may be available in the form of deployed sensor fields, autonomous vehicles and other similar capabilities; communicated intentions, on-going actions, requirements, and results to peer-level warfare commanders, supporting commands and higher authority; integrate functionality and interoperate with the needs of the TASWC and capabilities already available at theater commands; receive and distribute contact/track data, Tactical Decision Aid (TDA) data, and other information necessary for data fusion and providing coordinated situational awareness. Assets assigned to the TASWC and the SCC may include surface combatants; ASW aircraft; dedicated Mine Countermeasure (MCM) platforms; submarines; undersea surveillance platforms; shore processing facilities; supporting commands. These form a hierarchy of participants that will each be provided with varying levels of net-centric USW-DSS functionality.

Beginning in FY09, USW-DSS (Advanced Capability Build (ACB) 2) will be hosted on the Integrated Shipboard Network System (ISNS) as one of the first Early Adopters, leveraging initial Service Oriented Architecture (SOA) Reference Implementation. USW-DSS (ACB 3 and beyond) will be hosted on the Consolidated Adaptive Networks and Edge Services (CANES) architecture, which will be fully SOA enabled.

The objective of this PE, under Project 9C15A in FY08, is to develop an environmentally sealed, ruggedized, large-scale display for Tactical Operations Centers. This effort consists of the development, testing, and delivery of a production representative, environmentally sealed, 82-inch fan-less Light Emitting Diode (LED) driven, SCRAMscreen polyplaner array display system for the USN ASW Dead-Reckoning Table program.

EXHIBIT R-2, RDT&E BUDGET ITEM JUSTIFICATION (CONTINUATION)	DATE May 2009

APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	R-1 ITEM NOMENCLATURE **0604518N/COMBAT INFORMATION CENTER CONVERSION**

B. PROGRAM CHANGE SUMMARY:

Funding:	FY 2008	FY 2009	FY 2010
FY09 President's Budget	18.365	14.792	13.811
FY10 President's Budget	18.163	17.709	13.305
Total Adjustments	-0.202	2.917	-0.506
(U) Summary of Adjustments			
Congressional Rescissions	-0.021	0.000	0.000
Congressional Adjustments	0.000	2.992	0.000
SBIR/STTR/FTT Assessment	-0.181	0.000	0.000
Program Adjustments	0.000	0.000	0.000
Rate/Misc Adjustments	0.000	-0.075	-0.506
Total	-0.202	2.917	-0.506

C. OTHER PROGRAM FUNDING SUMMARY:

OPN BLI 2176 / USW Support Equipment

Specific Sub-Procurement Item:

Space Information Command and Control Programs (N61), Undersea Warfare-Decision Support System (USW-DSS)

Line Item No. and Name	FY 2008	FY 2009	FY 2010					Total Cost
OPN/BLI 2176/USW Support Equipment (Grand Total BLI)	14.805	15.532	38.705					69.042
OPN/BLI 2176/USW Support Equipment (Related N61 Portion)	6.100	2.299	2.752					11.151

D. ACQUISITION STRATEGY:

- Hardware/Software integration contractor to be funded through SBIR Phase III contract.

E. MAJOR PERFORMERS:

- Johns Hopkins University Applied Physics Laboratory (JHU/APL), Laurel, MD - USW-DSS OMI/HSI support, test & evaluation support
- NAVSEA, Carderock, MD - USW-DSS interface design and documentation, software management, test & evaluation
- NAVSEA, Keyport, WA - USW-DSS Carrier integration, track management
- NAVSEA, Newport, RI - USW-DSS Technical Design Agent (TDA), CHENG, submarine integration
- SSC, San Diego, CA - GCCS-M, C2 collaboration tools, network and security certifications, mission planner development
- Progeny Systems Corporation, Manassas, VA - USW-DSS hardware/software integration
- Adaptive Methods, Centerville, VA - USW-DSS software development

CLASSIFICATION:	UNCLASSIFIED						
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION					DATE May 2009		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**				PROJECT NUMBER AND NAME **3094/USW Decision Support**		
COST (In Millions)	FY 2008	FY 2009	FY 2010				
Project Cost	16.616	14.717	13.305				
RDT&E Articles Qty	0	0	0				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:
Project 3094 will develop the Undersea Warfare Decision Support System (USW-DSS) that will:

1) Provide a critical Command & Control (C2) capability package that includes improvements in battle group vulnerability assessments, sensor performance predictions, mission planning and execution improvements, and optimized search planning and collaboration capabilities for the SCC, TASWC, MIW Commander and ASW Commander;
2) Provide full capability to plan and conduct USW operations through functional alignment of platforms/sensors to exploit the environment and improved allocation of resources; and
3) Increase lethality and survivability through improved asset allocation, optimized platform/sensor placement, and increased situational awareness.

These capabilities will provide a consistent, accurate, and timely situational understanding of the underwater battle space and the various entities that may influence it, including force disposition and the environment (atmospheric, oceanographic and geographic), to all participants that are in the process of conducting either ASW, MIW or other warfare operations. USW-DSS capabilities will be developed and integrated in a build-test-build process with each build improving on the previous delivery and/or adding additional capabilities.

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EXHIBIT R-2a

RDT&E PROJECT JUSTIFICATION

CLASSIFICATION:	UNCLASSIFIED	

EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION	DATE May 2009

APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604518N/COMBAT INFORMATION CENTER CONVERSION	PROJECT NUMBER AND NAME 3094/USW Decision Support

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
USW-DSS Advanced Capability Build 2.0 Development / Integration / Test	3.911	0.500	0.000
RDT&E Articles Quantity	0	0	0

Integrate and test additional USW-DSS tools/capabilities, including Improved ASW track management, automated asset allocation, automated re-planning, battle management capabilities including engagement target pairing, cross platform data fusion, and improved theater USW capabilities. Incorporate visualization/display service currently demonstrated as Theater ASW Composeable FORCEnet (CFn) prototype.

FY08-09 - Complete integration, testing, and evaluation of new functionality in USW-DSS incremental ACB 2.0. Develop and implement upgrades based upon Operational Testing. Conduct development, integration, testing, and evaluation of ACB 2.0 upgrades and correct deficiencies identified during OAs.

	FY 2008	FY 2009	FY 2010
USW-DSS Advanced Capability Build 3.0 Development / Integration / Test	0.000	3.328	2.561
RDT&E Articles Quantity	0	0	0

Integrate and test additional USW-DSS tools/capabilities including improved integrated mission planning/execution tools, additional ASW track management improvement, improved situational awareness capabilities, improved data management including automated recommendations and extended use of intelligent agents, additional interfaces with tactical and environmental sensors, and MPRA ASW C2 toolset.

FY09 - Initiate specification and architecture for USW-DSS ACB 3.0.
FY10 - Complete development, integration, and testing of USW-DSS incremental ACB 3.0. Integrate USW-DSS with ISNS/CANES Architecture.

	FY 2008	FY 2009	FY 2010
USW-DSS Advanced Capability Build 4.0 Development / Integration / Test	0.000	0.000	1.441
RDT&E Articles Quantity	0	0	0

Integrate and test additional/improved USW-DSS tools/capabilities based on ACB 3.0, including integrated mission planning/execution tools, ASW track management, situational awareness capabilities, data management (including automated recommendations and extended use of intelligent agents), interfaces with tactical and environmental sensors, and the MPRA ASW C2 toolset.

FY10 - Initiate specification and architecture for USW-DSS ACB 4.0.

Complete development, integration, and testing of USW-DSS incremental ACB 4.0. Integrate USW-DSS with ISNS/CANES architecture.

	FY 2008	FY 2009	FY 2010
ISNS/CANES Integration	0.000	2.000	2.000

		DATE May 2009
EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)		
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**	PROJECT NUMBER AND NAME **3094/USW Decision Support**

RDT&E Articles Quantity	0	0	0

Beginning in FY09, provide the required integration and testing for migration to the Integrated Shipboard Network System (ISNS) (USW-DSS ACB 2.0) and Consolidated Adaptive
Networks and Edge Services (CANES) (USW-DSS ACB 3.0 and out) for surface platforms.

	FY 2008	FY 2009	FY 2010
Mission Planning Development	3.605	2.089	2.803
RDT&E Articles Quantity	0	0	0

Develop and test integrated mission planning tools, including necessary TDAs and C2 tools, to optimize the use of all available platform and distributed sensors. Develop
multi-static TDAs/tools for enhanced detection and interference prevention. Develop asset allocation tools. Incorporate real-time sensor performance and develop common
display standards for maximum information sharing. Provide Mission Planning capabilities/tools for integration into the appropriate USW-DSS incremental builds.

	FY 2008	FY 2009	FY 2010
ASW Track Management Development	4.700	2.200	0.500
RDT&E Articles Quantity	0	0	0

Develop C2 tools to support new automated No Attack (NOTACK) concepts. Establish new track structure which allows sharing of ASW   collaborative-level   contacts and includes
amplifying contact information. Develop scalable track sharing capabilities, including intermittent operations with submarines and Maritime and Patrol Reconnaissance
Aircraft (MPRA). Develop an ASW threat prioritization and ASW target asset pairing TDA. Define and develop all sensor data fusion services. Provide capabilities for
implementation into the appropriate USW-DSS incremental builds.

	FY 2008	FY 2009	FY 2010
Improved Situational Awareness Development	1.000	2.500	3.500
RDT&E Articles Quantity	0	0	0

Develop the necessary capabilities to exchange data between C2 and Combat Systems to support enhanced ASW situational awareness. Develop improved force planning and status
tools to access database and systems to obtain the status of platforms and combat systems (fuel, weapon inventory, readiness, etc.). Incorporate this information into
planning system models. Provide capabilities for implementation into the appropriate USW-DSS incremental builds.

	FY 2008	FY 2009	FY 2010
MPRA ASW C2 Toolset Development	1.500	1.500	0.500
RDT&E Articles Quantity	0	0	0

Develop a P-3/Multi-Mission Maritime Aircraft (MMA) C2 toolset to include an integrated USW-DSS capability with the P-3 Integrated Tactical Picture. Capabilities will
include: Common Operational Picture (COP) collaboration toolset, track management, in-situ mission planning tools and initial interface with Joint Mission Planning System
(JMPS). Provide capabilities for implementation into the appropriate USW-DSS incremental build.

	FY 2008	FY 2009	FY 2010
Battle Management Capability Development	1.900	0.600	0.000
RDT&E Articles Quantity	0	0	0

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EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION (CONTINUATION)		DATE May 2009
APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**	PROJECT NUMBER AND NAME **3094/USW Decision Support**

Develop TDA/tools for the engagement phase of an operation. These capabilities will include asset allocation, dynamic vulnerability analysis, dynamic re-planning, rapid access to rules of engagement, engagement target pairing, cross platform data fusion, reconstruction, improved Geographic Information System (GIS) functionality, and environmental data ingest and analysis. Provide capabilities for implementation into the appropriate USW-DSS incremental build.

EXHIBIT R-3, RDT&E PROJECT COST ANALYSIS

DATE
May 2009

APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**		PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**									PROJECT NUMBER AND NAME **3094/USW Decision Support**	

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY Cost ($000)			FY 2009 Cost ($000)	FY 2009 Award Date	FY 2010 Cost ($000)	FY 2010 Award Date		Total Cost ($000)	Target Value of Contract
Primary H/W & S/W Development	WR	NAWC Patuxent River, MD	0.000			0.300	OCT-08	0.300	OCT-09		0.600	0.000
Primary H/W & S/W Development	WR	NAVSEA Dahlgren, VA	0.000			0.000		0.501	OCT-09		0.501	0.000
Primary H/W & S/W Development	WR	NAVSEA Carderock, MD	1.810			0.917	OCT-08	0.834	OCT-09		3.561	0.000
Primary H/W & S/W Development	WR	NAVSEA Keyport, WA	1.679			0.840	OCT-08	0.764	OCT-09		3.283	0.000
Primary H/W & S/W Development	WR	NAVSEA Newport, RI	7.416			2.959	OCT-08	2.693	OCT-09		13.068	0.000
Primary H/W & S/W Development	WR	SSC San Diego, CA	0.970			0.300	OCT-08	0.300	OCT-09		1.570	0.000
Primary H/W & S/W Development	WR	VAR, (*See Remark)	0.839			0.000		0.000			0.839	0.000
Primary H/W & S/W Development	C/CPFF	Adaptive Methods, VA	3.446			2.236	NOV-08	2.012	NOV-09		7.694	0.000
Primary H/W & S/W Development	C/CPFF	JHU/APL, MD	1.446			0.537	NOV-08	0.537	NOV-09		2.520	0.000
Primary H/W & S/W Development	C/CPFF	Progeny, CA	7.584			2.224	NOV-08	2.024	NOV-09		11.832	0.000
Primary H/W & S/W Development	C/CPFF	VAR, (*See Remark)	2.175			3.684	NOV-08	2.620	NOV-09		8.479	0.000
Subtotal Product Development			**27.365**			**13.997**		**12.585**			**53.947**	**0.000**

Remarks:
* Consists of multiple performing activities with funding for each not greater than $1 million per year.

At-Sea Test and Evaluation	WR	VAR, VAR (*See Remark)	1.100			0.300	DEC-08	0.300	DEC-09		1.700	0.000
Subtotal Test and Evaluation			**1.100**			**0.300**		**0.300**			**1.700**	**0.000**

Remarks:
* Consists of multiple performing activities with funding for each not greater than $1 million per year.

Program Management Support	C/CPAF	BAE Systems, MD	1.260			0.420	NOV-08	0.420	NOV-09		2.100	0.000
Subtotal Management Services			**1.260**			**0.420**		**0.420**			**2.100**	**0.000**

Remarks:

Total Cost			**29.725**			**14.717**		**13.305**			**57.747**	**0.000**

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EXHIBIT R-3
RDT&E PROJECT COST ANALYSIS

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EXHIBIT R-4, SCHEDULE PROFILE	DATE May 2009

APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**	PROJECT NUMBER AND NAME **3094/USW Decision Support**

Fiscal Year	2008				2009				2010																		
	1	2	3	4	1	2	3	4	1	2	3	4															
Acquisition/Contract Milestones/Reviews				▲ SW/HW Integration Contract via SBIR III																						
						Development Contracts																				
USW-DSS Advanced Capability Build (ACB) 1	Deployment/Installation																									
USW-DSS Advanced Capability Build (ACB) 2 / CANES Increment 1 (ISNS) Integration	Development		IV&V	Cert.	Deployment/Installation w/ CANES Increment 1 (ISNS)																					
USW-DSS Advanced Capability Build (ACB) 3 / CANES Integration						Development																				
USW-DSS Advanced Capability Build (ACB) 4 / CANES Integration								Development																		
At-Sea Tests (All Builds)			Build 2 DT ▲		Build 2 Operational Observation ▲		Build 2 OT △																			
At-Sea Experiments (All Builds)			TW-08 ▲		Annualex-09 ▲		TW-09 △			VS-10 △																
System Deliveries OPN BLI 2176 (N6F USW-DSS)	Build 1				Build 2																					

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**EXHIBIT R-4
SCHEDULE PROFILE**

EXHIBIT R-4a, SCHEDULE DETAIL		DATE May 2009

APPROPRIATION/BUDGET ACTIVITY RDTEN/BA 5	PROGRAM ELEMENT NUMBER AND NAME 0604518N/COMBAT INFORMATION CENTER CONVERSION	PROJECT NUMBER AND NAME 3094/USW Decision Support

Schedule Profile	FY 2008	FY 2009	FY 2010			
USW-DSS Build 1 Delivery to CSGs	1Q-4Q					
USW-DSS Hardware/Software Integration Contract Award	3Q					
Trident Warrior (TW-08) Experiment	3Q					
USW-DSS Build 2 Developmental Test (DT)	3Q-4Q					
USW-DSS Build 2 Complete	4Q					
USW-DSS Build 2 Independent Validation/Verification	4Q					
USW-DSS Build 2 Certification	4Q					
ANNUALEX-09 (USW-DSS Build 2 Prototype)		1Q				
USW-DSS Build 2 Delivery to CANES Increment 1 (ISNS)		1Q-2Q	1Q-4Q			
USW-DSS Operational Observation		2Q				
USW-DSS Operational Test		4Q				
Trident Warrior (TW-09) Experiment		4Q				
Valiant Shield (VS-10) Experiment			4Q			
USW-DSS Build 3 Complete			4Q			

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EXHIBIT R-4a
SCHEDULE DETAIL

EXHIBIT R-2a, RDT&E PROJECT JUSTIFICATION	DATE May 2009

APPROPRIATION/BUDGET ACTIVITY **RDTEN/BA 5**	PROGRAM ELEMENT NUMBER AND NAME **0604518N/COMBAT INFORMATION CENTER CONVERSION**	PROJECT NUMBER AND NAME **9999/Congressional Add**

B. ACCOMPLISHMENTS/PLANNED PROGRAM:

	FY 2008	FY 2009	FY 2010
Environmentally Sealed, Ruggedized Large Scale Display for Tactical Ops	1.547	0.000	0.000
RDT&E Articles Quantity	0	0	0

FY08 Congressional Add: 9C15A - The Environmentally Sealed, Ruggedized Large Scale Display for Tactical Operations Centers Congressional Add develops, tests, and delivers a production representative, environmentally sealed, 82-inch fan-less LED driven / DLP, SCRAMscreen polyplaner array display system for the USN ASW Dead-Reckoning Table program.

	FY 2008	FY 2009	FY 2010
A Scalable Open Architecture Upgradeable Reliable Computing Environment	0.000	2.992	0.000
RDT&E Articles Quantity	0	0	0

FY09 Congressional Add: 9D81A - Scalable Open Architecture Upgradeable Reliable Computing Environment will provide infrastructure improvements to the Undersea Warfare - Decision Support System (USW-DSS AN/UYQ-100). The current computer server approach used by USW-DSS, as well as all currently fielded Information Technology (IT) systems, requires significant investment in many areas to field capability to the fleet. The current approach to loading applications on servers and imposed server cabinet size limitations due to ship installation location provides limited redundancy and prevents future migration to improved Contractor-Off-The-Shelf (COTS) processing power to support planned functionality improvements. To meet fleet desires to accelerate the fielding of USW-DSS, the Navy needs to migrate to a more cost effective and efficient method of fielding a more scalable, open, upgradeable, reliable computing environment (SOURCE). The focus of this effort will be investigation into adapting and tailoring commercial standards and COTS-based hardware and open source software for SOURCE development.