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

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604518N: <i>Combat Information Center Conv</i>
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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
Total Program Element	12.757	5.044	3.400	-	3.400	3.301	3.302	3.373	3.434	Continuing	Continuing
3094: <i>USW Decision Support</i>	12.757	5.044	3.400	-	3.400	3.301	3.302	3.373	3.434	Continuing	Continuing

A. Mission Description and Budget Item Justification

The objective of this Program Element (PE), under Project 3094, is to provide capabilities to shorten command and control (C2) decision processes for detection-to-engagement across multiple platforms, including those with low-bandwidth communications or intermittent connectivity. The Undersea Warfare Decision Support System (USW-DSS) decision support tool uses a Service Orientated Architecture (SOA) encompassing existing communication links, networks, and contact pictures comprised of sensor data from air, surface, submarine, theater, and surveillance platforms to connect sensors and weapons. The capabilities delivered by USW-DSS are critical not only for the Sea Combat Commander (SCC) but also for the Theater USW Commander (TUSWC) and Anti Submarine Warfare Commander (ASWC) to fulfill the requirement for an integrated capability to plan, conduct, and coordinate USW operations across multiple ASW platforms. USW-DSS will provide common and improved visualization, integrated USW platform sensor data sharing, reduced data entry, improved sensor performance predictions, data fusion, and reduced redundancy across USW Tactical Decision Aids (TDA). The program will provide a greater understanding of the undersea battle space by allowing the entire force (carrier/expeditionary strike group, theater, or other) to have a common and thorough understanding of the battle space with characterized uncertainties.

USW-DSS Build 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 will be hosted on the Consolidated Automated Networks and Enterprise Services (CANES) architecture, which will be fully SOA enabled.

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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	13.250	5.044	5.036	-	5.036
Current President's Budget	12.757	5.044	3.400	-	3.400
Total Adjustments	-0.493	-	-1.636	-	-1.636
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.456	-			
• Program Adjustments	-	-	-1.547	-	-1.547
• Section 219 Reprogramming	-0.036	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.089	-	-0.089
• Congressional General Reductions Adjustments	-0.001	-	-	-	-

Change Summary Explanation

Technical: Not applicable.

Schedule: Due to a reprioritization of requirements, the schedule has shifted to the right for USW-DSS Build 3 and Build 4 development and fielding efforts. USW-DSS Build 2, Release 3 will provide an incremental update of Build 2 to field as much capability to the Fleet as possible.

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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
3094: <i>USW Decision Support</i>	12.757	5.044	3.400	-	3.400	3.301	3.302	3.373	3.434	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

Project 3094 will develop the USW-DSS that will provide ASW Control and Control capabilities which enable the CNO vision for ASW Superiority using a "coordinated, networked force of submarines, surface ships, aircraft, and Integrated Undersea Surveillance System (IUSS) assets" with "common and unambiguous views that yield operational and tactical situational awareness in the undersea environment."

USW-DSS provides capabilities to shorten C2 decision processes for detection-to-engagement across multiple platforms, including those with low-bandwidth communications or intermittent connectivity. The USW-DSS decision support tool uses a SOA encompassing existing communication links, networks, and contact pictures comprised of sensor data from air, surface, submarine, theater, and surveillance platforms to connect sensors and weapons. The capabilities delivered by USW-DSS are critical not only for the SCC but also for the TUSWC and ASWC to fulfill the requirement for an integrated capability to plan, conduct, and coordinate USW operations across multiple ASW platforms. USW-DSS will provide common and improved visualization, integrated USW platform sensor data sharing, reduced data entry, improved sensor performance predictions, data fusion, and reduced redundancy across USW TDAs. The program will provide a greater understanding of the undersea battle space by allowing the entire force (carrier/expeditionary strike group, theater, or other) to have a common and thorough understanding of the battle space with characterized uncertainties.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)

	FY 2010	FY 2011	FY 2012
Title: USW-DSS Build 2 Development / Integration / Test	10.282	2.744	-
Articles:	0	0	
Description: Integrate and test additional USW-DSS tools/capabilities including Common Tactical Picture, Platform Data Fusion Integration, Cross-Platform Data Fusion, Automated Asset Allocation, Asset/Threat State Information, Vulnerability Analysis enhancement, ASW Track Management, Automated Re-planning, Engagement Target Pairing and improved Theater USW capabilities and incorporate visualization/display service.			
FY 2010 Accomplishments: Integrated USW-DSS with ISNS architecture as one of the first early-adopters. Incorporated Line of Bearing. Reduced clutter by 10 percent using track filtering. Incorporated AN/SPS-74(V)1 Periscope Detection tracks and AN/SQQ-34 Carrier Tactical Support Center (CV-TSC) sensor tracks into USW-DSS.			
FY 2011 Plans: Provide first Fleet Active Interference Tactical Decision Aids (TDAs). Provide ASW Search and Attack templates to the Sea Combat Commander. Incorporate AN/SQQ-89 sensor tracks into USW-DSS. Reduce total bandwidth requirements for USW-DSS			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2010	FY 2011	FY 2012
data transmission and provide for uni-directional interface to Tactical Digital Information Link (Link 11/16). Complete USW-DSS Build 2 Release 3 (R3).				
Title: USW-DSS Build 3 Development / Integration / Test				
Articles:		1.775 0	1.825 0	3.075 0
Description: Integrate battlespace management tools/capabilities into USW-DSS. Build 3 source code will leverage from Build 2, including Enhanced Common Tactical Picture and Cross Platform Data Fusion. Begin incorporation of High Value Unit (HVV) protection planning tools for transit and sustained operating area conditions. Improve combat system integration to further reduce detect-to-engage timeline through AN/SQQ-89 ACB-11, CV-TSC AN/SQQ-34 Increment 2 and Surveillance Towed Array Sensor System (SURTASS) coordination. Define scaled Maritime Patrol and Reconnaissance Aircraft (MPRA) variant and support delivery to PMA 290 for P-8 initial deliveries. Integrate Office of Naval Research (ONR) products and SBIR phase II development for further technology improvement. Define integration approach and execution with Submarine community.				
FY 2010 Accomplishments: Submitted Capability Production Document (CPD), System Engineering Plan, System Requirement Specifications and System Architecture and Requirements Allocation Description (SARAD) to provide requirements for Build 3. Conducted System Requirements Review and allocation baseline review for initial design. Conducted Preliminary Design Review for Build 3 4Q10.				
FY 2011 Plans: Conduct system architecture and requirements analysis including task analysis for Critical Design Review (CDR); produce other acquisition design documents prior to CDR such as the Software Requirements Verification Matrix (SRVM) and Interface Requirements Specification; conduct build verification test, performance verification test, and software test plan. The draft gold disk will also be produced as a software baseline for Build 3.				
FY 2012 Plans: Continue development and integration of USW-DSS increment ACB15/Build 3 through the Peer Review Process (PRP). Begin implementation of component design and assessment and assess the maturity of the software improvement and technology upgrade during the step-wise PRP and eliminate/delay unmaturing capability improvements. Begin implementation of the design. Produce final draft of all acquisition documents initiated in FY11.				
Title: ISNS/CANES Integration				
Articles:		0.700 0	0.475 0	0.325 0
FY 2010 Accomplishments:				

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continued the required integration and testing for migration to the Integrated Shipboard Network System (ISNS) and begin planning for the migration to the Consolidated Automated Networks and Enterprise Services (CANES) for surface platforms. FY 2011 Plans: Continue migration to the Integrated Shipboard Network System (ISNS) and initiate integration and testing efforts for the migration to the Consolidated Automated Networks and Enterprise Services (CANES). FY 2012 Plans: Continue migration to the Integrated Shipboard Network System (ISNS) and continue integration and testing efforts for the migration to the Consolidated Automated Networks and Enterprise Services (CANES).			
Accomplishments/Planned Programs Subtotals	12.757	5.044	3.400

C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN/2176: <i>USW Support Equipment (Related Portion)</i>	2.697	2.613	3.429	0.000	3.429	3.238	3.239	3.277	3.327	Continuing	Continuing

D. Acquisition Strategy
-Hardware/Software integration contractor funded through SBIR Phase III contract.

E. Performance Metrics
- Reduce the Detect-to-Engage timeline, false contact rate, and false alarm rate by employing a service-orientated architecture between the sensors and weapons.
- ASW Search Plan/Mission Planning reduced from 6 hours to 1 hour between USW-DSS Build 1 and Build 2.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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Product Development (\$ 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
Primary H/W & S/W Development	WR	NAWC/Pax River:MD	0.300	-		-		-		-	0.000	0.300	
Primary H/W & S/W Development	WR	NSWC/Dahlgren:VA	0.501	-		-		-		-	0.000	0.501	
Primary H/W & S/W Development	WR	NSWC/Carderock:MD	2.562	0.734	Nov 2010	0.675	Oct 2011	-		0.675	Continuing	Continuing	Continuing
Primary H/W & S/W Development	WR	NUWC/Keyport:WA	2.837	0.125	Jan 2011	0.275	Oct 2011	-		0.275	Continuing	Continuing	Continuing
Primary H/W & S/W Development	WR	NUWC/Newport:RI	9.035	0.812	Jan 2011	0.583	Oct 2011	-		0.583	Continuing	Continuing	Continuing
Primary H/W & S/W Development	WR	SSC/San Diego:CA	0.850	-		-		-		-	0.000	0.850	
Primary H/W & S/W Development	WR	VAR1:VAR*	0.839	0.055	Nov 2010	-		-		-	0.000	0.894	
Primary H/W & S/W Development	C/CPFF	Adaptive Methods:VA	5.098	1.165	Nov 2010	0.575	Dec 2011	-		0.575	Continuing	Continuing	Continuing
Primary H/W & S/W Development	C/CPFF	JHU/APL:MD	2.425	0.300	Feb 2011	0.200	Dec 2011	-		0.200	Continuing	Continuing	Continuing
Primary H/W & S/W Development	C/CPFF	Progeny:VA	8.303	1.009	Nov 2010	0.350	Dec 2011	-		0.350	Continuing	Continuing	Continuing
Primary H/W & S/W Development	C/CPFF	VAR2:VAR*	4.603	0.406	Feb 2011	0.282	Dec 2011	-		0.282	Continuing	Continuing	Continuing
Subtotal			37.353	4.606		2.940		-		2.940			

Remarks

*Consists of multiple performing activities with funding for each not greater than \$1M per year.

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
At-Sea Test and Evaluation	WR	VAR:VAR	1.200	0.300	Feb 2011	0.350	Oct 2011	-		0.350	Continuing	Continuing	Continuing

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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	
Subtotal			1.200	0.300		0.350		-		0.350				

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

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	BAE Systems:MD	1.680	0.138	Jan 2011	0.110	Dec 2011	-		0.110	Continuing	Continuing	Continuing	
Subtotal			1.680	0.138		0.110		-		0.110				

			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			40.233	5.044		3.400		-		3.400			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3094				
USW-DSS Build 2 Deployment with ISNS Increment 1	1	2010	4	2015
USW-DSS Build 2 (Release 3) Independent Verification/Validation	2	2011	2	2011
USW-DSS Build 2 (Release 3) Certification	2	2011	3	2011
USW-DSS Build 3 Development	1	2010	3	2014
USW-DSS Build 3 Independent Verification/Validation	3	2014	4	2014
USW-DSS Build 3 Certification	4	2014	4	2014
USW-DSS Build 3 Deployment	1	2015	4	2016
At-Sea Developmental Test	4	2011	1	2012
At-Sea Operational Test	2	2012	3	2012
At-Sea Experiment - Valiant Shield (VS-12)	4	2012	4	2012