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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2015 Navy **Date:** March 2014

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0604562N / <i>Submarine Tactical Warfare System</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015 Base</b>	<b>FY 2015 OCO #</b>	<b>FY 2015 Total</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	415.966	43.555	49.135	38.985	-	38.985	55.514	51.006	53.785	66.424	Continuing	Continuing
0236: <i>SSN Comb Cont Sys Imprvmnt (ENG)</i>	415.966	43.555	49.135	38.985	-	38.985	55.514	51.006	53.785	66.424	Continuing	Continuing

# The FY 2015 OCO Request will be submitted at a later date.

**A. Mission Description and Budget Item Justification**

Project Unit 0236: This program develops Commercial-Off-The-Shelf (COTS) based software and hardware upgrades to integrate improved tactical and weapons control capabilities for multiple submarine Classes (SSN-688, SSGN, SEAWOLF, SSBN and VIRGINIA (Post Shakedown Availability)). The AN/BYG-1 is the combat control system common across submarine platforms which incorporates tactical control, weapon control, and tactical Local Area Network (LAN) functions into a single development program. The hardware upgrades, Technology Insertions (TI) are developed on a biennial basis to provide improved capability and address COTS obsolescence. Funding also accommodates the biennial integration of software Advanced Processing Builds (APB) for both tactical control (APB(T)) and weapon control (APB(W)) subsystems. The tactical control integration effort incorporates the integration of other sensor (ESM, sonar, radar, etc.) inputs to provide a common operational picture and improved situational awareness in an information assurance (IA) compliant environment. The weapon control development effort provides improvements to the weapons control subsystem based on improvements to missiles and torpedoes as well as development of a modernized Weapon Control System (WCS) architecture to support various payloads such as, but not limited to, Modular Undersea Heavyweight Vehicle (MUHV), Unmanned Aerial Systems (UAS), torpedoes, and sub launched mobile mines (SLMM). Provides funding for the development of Weapons Launch System, Multi-tube Weapons System (MTWS), Information Assurance (IA) system, Onboard Team Trainer (OBTT), and Command, Control, Computer and Intelligence Maintenance Tool (C3IMT). AN/BYG-1 allows the submarine Navy to rapidly update the ship safety tactical picture, integrate the common tactical picture into the battlegroup, improve torpedo interfaces, and provide Tactical TOMAHAWK (TOMAHAWK Block IV) capability.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015 Base</b>	<b>FY 2015 OCO</b>	<b>FY 2015 Total</b>
Previous President's Budget	49.141	49.143	48.263	-	48.263
Current President's Budget	43.555	49.135	38.985	-	38.985
Total Adjustments	-5.586	-0.008	-9.278	-	-9.278
• Congressional General Reductions	-	-0.008			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.391	-			
• Program Adjustments	-	-	-8.457	-	-8.457

**UNCLASSIFIED**

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1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>		PE 0604562N / <i>Submarine Tactical Warfare System</i>			
• Rate/Misc Adjustments	-	-	-0.821	-	-0.821
• Congressional General Reductions Adjustments	-4.195	-	-	-	-
<b><u>Change Summary Explanation</u></b>					
Reduced FY13 funding for Sequestration reductions.					
Reduced FY 15 funding due to the Department's decision to reduce contracted services.					
Technical: Added Weapons Control System effort Added SSBN Combat System Modernization Reduced SWFTS R&D					
Schedule: Not applicable.					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2015 Navy										<b>Date:</b> March 2014		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604562N / <i>Submarine Tactical Warfare System</i>				<b>Project (Number/Name)</b> 0236 / <i>SSN Comb Cont Sys Imprvmnt (ENG)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015 Base</b>	<b>FY 2015 OCO #</b>	<b>FY 2015 Total</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0236: <i>SSN Comb Cont Sys Imprvmnt (ENG)</i>	415.966	43.555	49.135	38.985	-	38.985	55.514	51.006	53.785	66.424	Continuing	Continuing
Quantity of RDT&E Articles	0.000	-	-	-	-	-	-	-	-	-		

# The FY 2015 OCO Request will be submitted at a later date.

**A. Mission Description and Budget Item Justification**

Project Unit 0236: This program develops Commercial-Off-The-Shelf (COTS) based software and hardware upgrades to integrate improved tactical and weapons control capabilities for multiple submarine Classes (SSN 688, SSGN, SEAWOLF, SSBN and VIRGINIA (Post Shakedown Availability)). The AN/BYG-1 is the combat control system common across submarine platforms which incorporates tactical control, weapon control, and tactical Local Area Network (LAN) functions into a single development program. The hardware upgrades Technology Insertions (TI) are developed on a biennial basis to provide improved capability and address COTS obsolescence. Funding also accommodates the biennial integration of software Advanced Processing Builds (APBs) for both tactical control (APB(T)) and weapon control (APB(W)) subsystems. The tactical control integration effort incorporates the integration of other sensor (ESM, sonar, radar, etc.) inputs to provide a common operational picture and improved situational awareness in an information assurance (IA) compliant environment. The weapon control development effort provides improvements to the weapons control subsystem based on improvements to missiles and torpedoes as well as development of a modernized Weapon Control System (WCS) architecture to support various payloads such as, but not limited to Modular Undersea Heavyweight Vehicle (MUHV), Unmanned Aerial Systems (UAS), torpedoes, and sub launched mobile mines (SLMM). AN/BYG-1 allows the submarine Navy to rapidly update the ship safety tactical picture, integrates the common tactical picture into the battlegroup, improves torpedo interfaces and provides Tactical TOMAHAWK (TOMAHAWK Block IV) capability.

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

	<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>
<b>Title:</b> Advanced Processor Builds	19.284	25.848	15.145
<b>Articles:</b>	-	-	-
<b>FY 2013 Accomplishments:</b> Continue development of APB-13 into AN/BYG-1 baseline.			
<b>FY 2014 Plans:</b> Complete APB-13 integration into AN/BYG-1 (TI-14) baseline. Support development of APB-15 into AN/BYG-1 baseline.			
<b>FY 2015 Plans:</b> Continue development of APB-15 into AN/BYG-1 (TI-14) baseline.			
<b>Title:</b> AN/BYG-1 TI-12	7.941	5.120	-
<b>Articles:</b>	-	-	-
<b>FY 2013 Accomplishments:</b>			

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>
Continue development, integration, and test of the next generation AN/BYG-1 (TI-12) for SSN 688/SSGN/VA Class submarines. <b>FY 2014 Plans:</b> Complete development, integration and test of the next generation AN/BYG-1 (TI-12) for SSN 688/SSGN/VA Class submarines. <b>FY 2015 Plans:</b> N/A				
<b>Title:</b> AN/BYG-1 TI-14		4.426	7.945	6.734
<b>Articles:</b>		-	-	-
<b>FY 2013 Accomplishments:</b> Continue development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines. <b>FY 2014 Plans:</b> Continue development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines. <b>FY 2015 Plans:</b> Complete development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines.				
<b>Title:</b> AN/BYG-1 TI-16		-	-	4.254
<b>Articles:</b>		-	-	-
<b>FY 2013 Accomplishments:</b> N/A <b>FY 2014 Plans:</b> N/A <b>FY 2015 Plans:</b> Begin development, integration and test of the next generation AN/BYG-1 (TI-16) for SSN 688/SSGN/SSBN/VA Class submarines.				
<b>Title:</b> Testing		5.340	3.591	4.597
<b>Articles:</b>		-	-	-
<b>FY 2013 Accomplishments:</b> Complete DT/OT for AN/BYG-1 APB-11 on SSN 688/SSGN/Seawolf/VA Class submarines. <b>FY 2014 Plans:</b>				

**UNCLASSIFIED**

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>		<b>FY 2013</b>	<b>FY 2014</b>	<b>FY 2015</b>
Begin DT/OT for AN/BYG-1 APB-13 on SSN 688/SSGN/Seawolf/VA Class submarines.				
<b>FY 2015 Plans:</b> Complete DT/OT for AN/BYG-1 APB-13 on SSN 688/SSGN/Seawolf/VA Class submarines.				
<b>Title:</b> Weapon Control System Upgrade				
		<b>Articles:</b>	-	-
		-	-	3.500
<b>FY 2013 Accomplishments:</b> N/A				
<b>FY 2014 Plans:</b> N/A				
<b>FY 2015 Plans:</b> Begin development process to modernize the Weapon Control System architecture to support various payloads.				
<b>Title:</b> Information Assurance (IA)				
		<b>Articles:</b>	6.564	6.631
		-	-	4.755
<b>FY 2013 Accomplishments:</b> Complete integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-12				
<b>FY 2014 Plans:</b> Develop and integrate IA Toolkit and conduct IA Certification Testing on BYG-1 TI-14				
<b>FY 2015 Plans:</b> Complete integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-14				
<b>Accomplishments/Planned Programs Subtotals</b>		43.555	49.135	38.985
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
This budget integrates APBs developed by the advanced development community.				
This program has been tailored in accordance with the new DoD5000 directive to incorporate annual MDA production reviews.				
Advanced Processing Builds (APB) products associated with AN/BYG-1 Release-To- Fleet 3Q 2013, 3Q 2015, 3Q 2017 and 3Q 2019.				

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**E. Performance Metrics**

AN/BYG-1 Submarine Combat and Weapon Control System performance metrics for each Advanced Processor Build (APB) and Technology Insertion (TI) cycle are contained in the classified Capability Production Document (CPD) annex to the overarching system requirements as laid out in the Capabilities Development Document (CDD). Each APB cycle receives an updated CPD based on fleet required capabilities.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2015 Navy** **Date:** March 2014

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604562N / <i>Submarine Tactical Warfare System</i>	<b>Project (Number/Name)</b> 0236 / <i>SSN Comb Cont Sys Imprvmnt (ENG)</i>
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Page 1	FY 2013			FY 2014			FY 2015			FY 2016			FY 2017			FY 2018			FY 2019									
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
<b>Acq Milestones</b>				MDA Program Review ▲				MDA Program Review ▲				MDA Program Review ▲				MDA Program Review ▲				MDA Program Review ▲				MDA Program Review ▲				
<b>APB I&amp;T, Certification</b>																												
APB-13																												
APB-15																												
APB-17																												
APB-19																												
<b>Development, I&amp;T Certification</b>																												
TI-12																												
TI-14																												
TI-16																												
TI-18																												
TI-20																												
<b>Test &amp; Evaluation Milestones</b>																												
DT/FOT&E																												
AN/BYG-1	APB-11 (DT/OT)							APB-13 (DT/OT)																				

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