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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy										Date: February 2015			
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)					R-1 Program Element (Number/Name) PE 0604562N / Submarine Tactical Warfare System								
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost	
Total Program Element	459.521	47.777	38.985	48.213	-	48.213	44.721	46.491	60.124	65.844	Continuing	Continuing	
0236: SSN Comb Cont Sys Imprvmnt (ENG)	459.521	47.777	38.985	48.213	-	48.213	44.721	46.491	60.124	65.844	Continuing	Continuing	

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. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	49.135	38.985	55.514	-	55.514
Current President's Budget	47.777	38.985	48.213	-	48.213
Total Adjustments	-1.358	-	-7.301	-	-7.301
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.006	-			
• SBIR/STTR Transfer	-1.352	-			
• Program Adjustments	-	-	-6.968	-	-6.968
• Rate/Misc Adjustments	-	-	-0.333	-	-0.333

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<u>Change Summary Explanation</u> Reduced FY16 funding due to SWFTS reductions and Tailored 2/4 SWFTS Modernization model. Schedule: Not applicable.		

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Exhibit R-2A, RDT&E Project Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604562N / Submarine Tactical Warfare System				Project (Number/Name) 0236 / SSN Comb Cont Sys Imprvmnt (ENG)			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
0236: SSN Comb Cont Sys Imprvmnt (ENG)	459.521	47.777	38.985	48.213	-	48.213	44.721	46.491	60.124	65.844	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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)

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Advanced Processing Builds	24.491	15.145	22.955	-	22.955
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Complete APB-13 integration into AN/BYG-1 (TI-14) baseline. Support development of APB-15 into AN/BYG-1 baseline.					
FY 2015 Plans: Continue development of APB-15 into AN/BYG-1 (TI-14) baseline.					
FY 2016 Base Plans: Start development of APB-17 into AN/BYG-1 (TI-16) baseline.					
FY 2016 OCO Plans: N/A					
Title: AN/BYG-1 TI-12	5.120	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)					
	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Complete development, integration and test of the next generation AN/BYG-1 (TI-12) for SSN 688/SSGN/VA Class submarines.					
FY 2015 Plans: N/A					
FY 2016 Base Plans: N/A					
FY 2016 OCO Plans: N/A					
Title: AN/BYG-1 TI-14	7.945	6.734	4.887	-	4.887
Articles:	-	-	-	-	-
FY 2014 Accomplishments: Continue development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines.					
FY 2015 Plans: Continue development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines.					
FY 2016 Base Plans: Complete development, integration and test of the next generation AN/BYG-1 (TI-14) for SSN 688/SSGN/VA Class submarines.					
FY 2016 OCO Plans: N/A					
Title: AN/BYG-1 TI-16	-	4.254	6.508	-	6.508
Articles:	-	-	-	-	-
FY 2014 Accomplishments: N/A					
FY 2015 Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)				FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Begin development, integration and test of the next generation AN/BYG-1 (TI-16) for SSN 688/SSGN/SSBN/VA Class submarines. FY 2016 Base Plans: Continue development, integration and test of the next generation AN/BYG-1 (TI-16) for SSN 688/SSGN/SSBN/VA Class submarines. FY 2016 OCO Plans: N/A								
Title: Weapon Control System Upgrade Articles:				- -	3.500 -	6.100 -	- -	6.100 -
FY 2014 Accomplishments: N/A FY 2015 Plans: Begin development process to modernize the Weapon Control System architecture to support various payloads. FY 2016 Base Plans: Continue development process to modernize the Weapon Control System architecture to support various payloads. FY 2016 OCO Plans: N/A								
Title: Testing Articles:				3.590 -	4.597 -	2.899 -	- -	2.899 -
FY 2014 Accomplishments: Begin DT/OT for AN/BYG-1 APB-13 on SSN 688/SSGN/Seawolf/VA Class submarines. FY 2015 Plans: Complete DT/OT for AN/BYG-1 APB-13 on SSN 688/SSGN/Seawolf/VA Class submarines. FY 2016 Base Plans: Begin DT/OT for AN/BYG-1 APB-15 on SSN 688/SSGN/Seawolf/VA Class submarines. FY 2016 OCO Plans:								

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A						
Title: Information Assurance (IA) FY 2014 Accomplishments: Develop and integrate IA Toolkit and conduct IA Certification Testing on BYG-1 TI-14 FY 2015 Plans: Complete integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-14 FY 2016 Base Plans: Develop integration of IA Toolkit and continue IA Certification Testing on BYG-1 TI-16 FY 2016 OCO Plans: N/A		6.631 -	4.755 -	4.864 -	- -	4.864 -
Articles:						
Accomplishments/Planned Programs Subtotals		47.777	38.985	48.213	-	48.213
C. Other Program Funding Summary (\$ in Millions)						
N/A						
Remarks						
D. Acquisition Strategy						
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 2015, 3Q 2017 and 3Q 2019.						
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-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
Appropriation/Budget Activity 1319 / 5						R-1 Program Element (Number/Name) PE 0604562N / Submarine Tactical Warfare System				Project (Number/Name) 0236 / SSN Comb Cont Sys Imprvmnt (ENG)					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
AN/BYG-1 TECH INSERTION	C/CPIF	GENERAL DYNAMICS (GDAIS) : FAIR LAKES, VA	79.464	5.634	Oct 2013	5.123	Oct 2014	5.147	Oct 2015	-		5.147	Continuing	Continuing	Continuing
AN/BYG-1 TECH INSERTION	C/CPIF	GENERAL DYNAMICS (GDAIS) : PITTSFIELD, MA	31.159	3.695	Oct 2013	3.246	Oct 2014	3.233	Oct 2015	-		3.233	Continuing	Continuing	Continuing
GOVERNMENT ENGINEERING	WR	NUWC : NEWPORT, RI	79.115	1.589	Oct 2013	1.448	Oct 2014	1.399	Oct 2015	-		1.399	Continuing	Continuing	Continuing
INFORMATION ASSURANCE	C/CPAF	PROGENY : MANASSAS, VA	22.337	6.631	Oct 2013	4.755	Oct 2014	4.864	Oct 2015	-		4.864	Continuing	Continuing	Continuing
AN/BYG-1 Tech Insertion	C/CPAF	Lockheed Martin (LM-MSS) : Manassas, VA	1.487	2.147	Oct 2013	1.171	Oct 2014	1.616	Oct 2015	-		1.616	Continuing	Continuing	Continuing
Subtotal			213.562	19.696		15.743		16.259		-		16.259	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
APB SOFTWARE INTEGRATION	C/CPIF	GENERAL DYNAMICS (GDAIS) : FAIRLAKES, VA	61.209	7.887	Oct 2013	5.160	Oct 2014	7.157	Oct 2015	-		7.157	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	C/CPIF	GENERAL DYNAMICS : PITTSFIELD, MA	16.167	3.260	Oct 2013	2.768	Oct 2014	4.718	Oct 2015	-		4.718	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	WR	NUWC : NEWPORT, RI	43.854	3.807	Oct 2013	2.883	Oct 2014	4.835	Oct 2015	-		4.835	Continuing	Continuing	Continuing
APB SOFTWARE INTEGRATION	C/CPAF	LOCKHEED MARTIN (LM-MSS) : MANASSAS, VA	3.921	4.466	Oct 2013	3.893	Oct 2014	6.271	Oct 2015	-		6.271	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
SOFTWARE DEVELOPMENT	Various	VARIOUS : VARIOUS:Not Specified	45.442	2.629	Oct 2013	1.902	Oct 2014	4.238	Oct 2015	-		4.238	Continuing	Continuing	Continuing
Subtotal			170.593	22.049		16.606		27.219		-		27.219	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
DEVELOPMENT TEST & EVALUATION	WR	NUWC : NEWPORT, RI	32.898	1.785	Oct 2013	1.498	Oct 2014	0.932	Oct 2015	-		0.932	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPIF	GENERAL DYNAMICS : FAIRLAKES, VA	6.896	0.524	Oct 2013	1.277	Oct 2014	0.711	Oct 2015	-		0.711	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPIF	GENERAL DYNAMICS : PITTSFIELD, MA	1.000	0.524	Oct 2013	1.277	Oct 2014	0.711	Oct 2015	-		0.711	Continuing	Continuing	Continuing
TEST & EVALUATION	C/CPAF	PROGENY : MANASSAS, VA	0.450	0.457	Oct 2013	0.466	Oct 2014	0.466	Oct 2015	-		0.466	Continuing	Continuing	Continuing
OPERATIONAL TEST & EVALUATION	WR	COMOPTEVFOR : NORFOLK, VA	16.374	0.300	Oct 2013	0.079	Oct 2014	0.079	Oct 2015	-		0.079	Continuing	Continuing	Continuing
Subtotal			57.618	3.590		4.597		2.899		-		2.899	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
PROGRAM MANAGEMENT SUPPORT	C/CPFF	VARIOUS : VARIOUS:Not Specified	17.748	2.442	Oct 2013	2.039	Oct 2014	1.836	Oct 2015	-		1.836	Continuing	Continuing	Continuing
Subtotal			17.748	2.442		2.039		1.836		-		1.836	-	-	-

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	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	459.521	47.777		38.985		48.213		-		48.213	-	-	-
Remarks													

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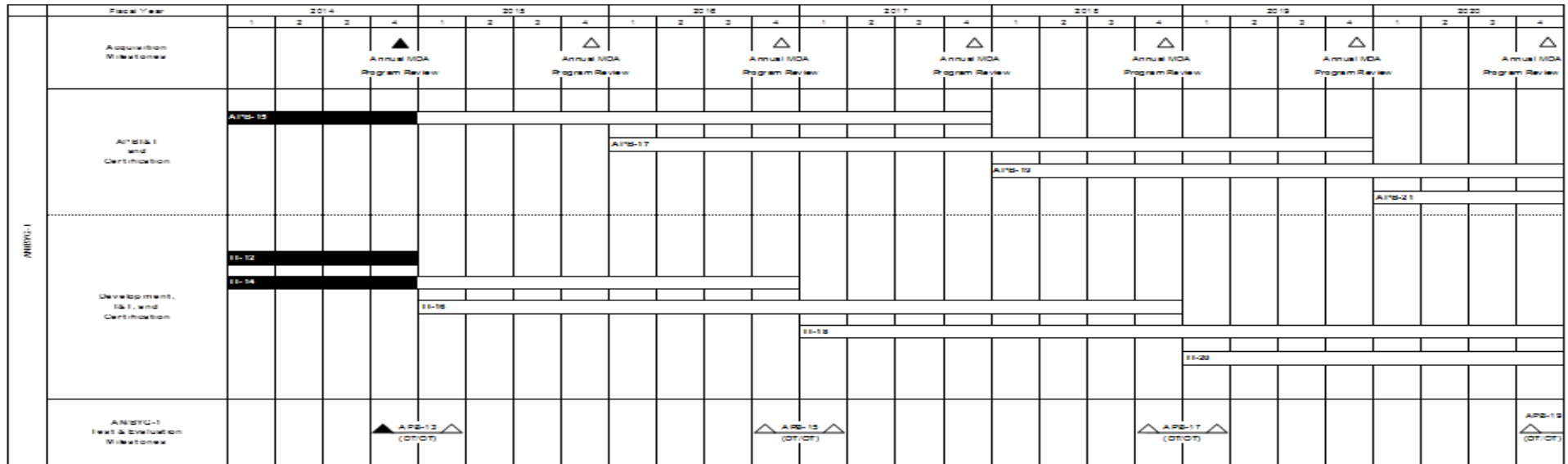
Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy

Date: February 2015

Appropriation/Budget Activity
1319 / 5

R-1 Program Element (Number/Name)
PE 0604562N / Submarine Tactical Warfare
System

Project (Number/Name)
0236 / SSN Comb Cont Sys Imprvmnt
(ENG)



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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy			Date: February 2015
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604562N / <i>Submarine Tactical Warfare System</i>	Project (Number/Name) 0236 / <i>SSN Comb Cont Sys Imprvmnt (ENG)</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Page 1				
Acq Milestones: Annual MDA Program Review - FY14	4	2014	4	2014
Acq Milestones: Annual MDA Program Review - FY15	4	2015	4	2015
Acq Milestones: Annual MDA Program Review - FY16	4	2016	4	2016
Acq Milestones: Annual MDA Program Review - FY17	4	2017	4	2017
Acq Milestones: Annual MDA Program Review - FY18	4	2018	4	2018
Acq Milestones: Annual MDA Program Review - FY19	4	2019	4	2019
Acq Milestones: Annual MDA Program Review - FY20	4	2020	4	2020
APB I&T, Certification: APB-15: APB-15	1	2014	4	2017
APB I&T, Certification: APB-17: APB-17	1	2016	4	2019
APB I&T, Certification: APB-19: APB-19	1	2018	4	2020
APB I&T, Certification: APB-21: APB-21	1	2020	4	2020
Development, I&T Certification: TI-12: TI-12	1	2014	4	2014
Development, I&T Certification: TI-14: TI-14	1	2014	4	2016
Development, I&T Certification: TI-16: TI-16	1	2015	4	2018
Development, I&T Certification: TI-18: TI-18	1	2017	4	2020
Development, I&T Certification: TI-20: TI-20	1	2019	4	2020
Test & Evaluation Milestones: AN/BYG-1: APB-13 DT/OT	4	2014	1	2015
Test & Evaluation Milestones: AN/BYG-1: APB-15 DT/OT	4	2016	1	2017
Test & Evaluation Milestones: AN/BYG-1: APB-17 DT/OT	4	2018	1	2019
Test & Evaluation Milestones: AN/BYG-1: APB-19 DT/OT	4	2020	4	2020