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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Navy **DATE:** April 2013

APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204229N: <i>Tomahawk Mssn Planning Ctr</i>
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COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	3,084.398	8.581	11.265	12.407	-	12.407	16.858	16.091	11.096	5.083	Continuing	Continuing
0545: TOMAHAWK	3,084.398	8.581	11.265	12.407	-	12.407	16.858	16.091	11.096	5.083	Continuing	Continuing

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

Includes RDT&E funds for development of the Tomahawk encompassing Tomahawk Land-Attack Missile (TLAM) upgrades, Tactical Tomahawk Weapons Controls System, Tomahawk Command and Control System upgrades and other missile system improvements. The Tomahawk Weapons System provides a Tomahawk cruise missile attack capability against fixed and mobile targets. The TLAM can be fitted with either Conventional unitary warhead (TLAM/C), Nuclear warhead (TLAM/N) or submunition Dispenser (TLAM/D). Tomahawk is capable of being deployed from both submarines and surface ships. Launched from mobile, sea-based platforms, the land attack variant will significantly increase the total capability of joint forces.

This program is funded under Operational Systems Development because it includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total
Previous President's Budget	8.819	11.265	4.626	-	4.626
Current President's Budget	8.581	11.265	12.407	-	12.407
Total Adjustments	-0.238	0.000	7.781	-	7.781
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.064	0.000			
• SBIR/STTR Transfer	-0.174	0.000			
• Program Adjustments	0.000	0.000	7.791	-	7.791
• Rate/Misc Adjustments	0.000	0.000	-0.010	-	-0.010

Change Summary Explanation

FY14 increase in funding will be used to commence image navigation integration into Block IV weapons system, conduct initial evaluation of image navigation performance and characterization, and develop requirements and design for image navigation.

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0204229N: Tomahawk Mssn Planning Ctr				PROJECT 0545: TOMAHAWK			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0545: TOMAHAWK	3,084.398	8.581	11.265	12.407	-	12.407	16.858	16.091	11.096	5.083	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

A. Mission Description and Budget Item Justification

The Tomahawk Weapons System (TWS) provides a Tomahawk cruise missile attack capability against fixed and mobile targets. This program ensures that the TWS exploits state-of-the-art technology to preserve the efficiency of this proven weapon system, and includes all missile development, mission planning system development, and submarine and surface ship weapons control system development.

The Tactical Tomahawk All-Up-Round (AUR) Block IV missile is a comprehensive spiral baseline upgrade to the TWS that provides the tactical commander a quick reaction response capability as well as improved flexibility, increased accuracy and higher lethality. A five-year multi-year (FY04-FY08) production contract was awarded in August 2004 for the production of up to 2200 Block IV Tomahawk missiles. The essential upgrades of the Block IV missile are: improved guidance, navigation, control and mission computer two-way satellite communications (SATCOM), and a lower production cost as compared to the Block III missile. Block IV provides a Ultra High Frequency SATCOM data link to enable the missile to receive in-flight mission modification messages, to transfer health and status messages and to broadcast Battle Damage Indication messages. Block IV also includes a high anti-jam Global Positioning System (GPS) receiver, navigation improvements and associated antenna systems. The Tomahawk program also includes development of continuing advances identified as spiral development under the Tomahawk Baseline IV Operational Requirements Document (ORD), to include development of the Joint Multiple Effects Warhead System/Joint Capability Technology Demonstration (JMEWS/JCTD).

Under the umbrella of the Theater Mission Planning Center (TMPC), the Tomahawk Command and Control System (TC2S) is the mission planning segment of the TWS that provides systems for the precision targeting, route planning, mission distribution, and strike management of Tomahawk cruise missile missions from sites located ashore and afloat. TMPC optimizes all aspects of the Tomahawk missile mission to successfully engage a target and has evolved into five scalable configurations: Cruise Missile Support Activities (CMSA) (3), Tomahawk Strike Mission Planning Cells (TSMPC) (3), Carrier Strike Groups (CSGs) (16), Firing Units (84), Command & Control Nodes (11), Labs (5), and Training Classrooms (6), for a total of 128 sites. Systems fielded at the CMSAs and TSMPCs provide mission planning and employment support information for conventional TLAM, including the distribution of mission data and command information essential to TLAM employment via the Mission Distribution System and associated communications infrastructure. Development of Tactical Tomahawk capabilities in TMPC/TC2S includes software development, integration, test, and delivery, including support for training development, installation planning, and simulation/model development required by Commander, Operational Test and Evaluation Force. This project also includes development related to national and tactical imagery architectures, as well as software development to decrease mission planning time and increase the quality and accuracy of each mission for Block III and IV TLAM.

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy		DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development	R-1 ITEM NOMENCLATURE PE 0204229N: Tomahawk Mssn Planning Ctr	PROJECT 0545: TOMAHAWK		
The Tactical Tomahawk Weapons Control System (TTWCS) provides launch capability for surface and submarine platforms. Development of the TTWCS provides a common architecture to launch the TACTOM Block IV and all variants in inventory. Development of upgrades to the TTWCS is required to meet the Department of Defense Information Technology Standards Registry, to meet FORCEnet compliance and be Internet Protocol Version 6 ready in order to remain interoperable within the Joint Service Architecture and to retain weapons system viability and usability for our Sailors. These efforts provide battle-group tactical flexibility and responsiveness while maximizing TWS wartime capability.				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
Title: Tactical Tomahawk All-Up-Round (AUR)		5.125	8.797	4.511
Articles:		0	0	0
Description: Achieve Selective Availability Anti-Spoofing Module (SAASM) Full Operational Capability (FOC), and completion of the cooperatively funded United States Navy/United Kingdom JMEWS/JCTD multi-stage warhead technical demonstration. Include significant research and analysis of the worldwide target set capability gaps to include Hard and Buried Targets (HDBT) and Prompt Global Strike (PGS) Targets, for which JMEWS is a potential solution. In addition, NAWCAD also provides engine power data/analysis in order to determine reserve power available to power potential upgrades to the Tomahawk AUR, such as JMEWS.				
FY 2012 Accomplishments: Completed JMEWS/JCTD. Completed AUR platform integration of SAASM. Achieved SAASM program FOC.				
FY 2013 Plans: Begin acquisition milestone documentation for the JMEWS transition. Requirements, Concept of Operations (CONOPS), and software development for image navigation technology. Non-recurring engineering, systems and software development, integration and testing of capability upgrades to address emergent threats, Urgent Operational Needs Statement (UONS) and ORD target set gap.				
FY 2014 Plans: Commence image navigation integration into Block IV weapons system. FY 2014 efforts include requirements development and documentation; CONOPS development; software development; mission planning updates; and integration efforts. Continuation of JMEWS transition, integration, and demonstration efforts. Assessing and testing communication architecture and technologies to overcome more challenging communication environments. Target assessments, campaign planning and mission analysis for potential Tactical Tomahawk upgrades or new applicable weapons. Non-recurring engineering, systems and software development, integration and testing of capability upgrades to address emergent threats, UONS, Fleet Gaps, and the Tomahawk ORD.				
Title: Tactical Tomahawk Weapons Control System (TTWCS)		0.990	0.000	0.000
Articles:		0		

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2012		FY 2013		FY 2014	
Description: Continue TTWCS Viability activities and complete SAASM integration of TTWCS V5.4.0 in order to enter Follow on Test and Evaluation (FOT&E) for fleet release.													
FY 2012 Accomplishments: Completed development of TTWCS viability and entered FOT&E. Prepared for Fleet Release of TTWCS v5.4.0. Continued development work on TTWCS v5.4.1 toward achievement of full TTWCS viability, and launch platform integration on platforms existing and in development.													
Title: Tomahawk Command and Control Systems								2.466		2.468		7.896	
Articles:								0		0		0	
Description: Development and incorporation of new capabilities in Tomahawk Command and Control Systems (TC2S) necessary for the employment of Tactical Tomahawk. Imagery upgrades to TC2S. Continue test & evaluation support for TC2S.													
FY 2012 Accomplishments: Continued Tomahawk Land Attack Missile (TLAM) navigation and accuracy and weapons delivery Circular Error Probable (CEP) studies and assessments necessary to ensure the TWS is properly employed; continued evaluation of TC2S design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TC2S. Continued evaluation of imagery formats resulting from National Geospatial Intelligence Agency (NGA) mandated architectural changes.													
FY 2013 Plans: Continue TLAM navigation and accuracy and weapons delivery CEP studies and assessments necessary to ensure the TWS is properly employed; continue evaluation of TC2S design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TC2S. Continue evaluation of imagery formats resulting from NGA mandated architectural changes.													
FY 2014 Plans: Continue TLAM navigation and accuracy and weapons delivery CEP studies and assessments necessary to ensure the TWS is properly employed; continue evaluation of TC2S design process to ensure Tactical Tomahawk missile performance characteristics are adequately modeled in TC2S. Continue evaluation of imagery formats resulting from NGA mandated architectural changes. Initial evaluation of image navigation performance and characterization. Develop requirements and design for image navigation.													
Accomplishments/Planned Programs Subtotals								8.581		11.265		12.407	
C. Other Program Funding Summary (\$ in Millions)													
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost		
• WPN/2101: Tomahawk	297.606	308.970	312.456		312.456	322.760	330.217	336.181	342.208	782.188	14,779.859		

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C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• OPN/5253: Tomahawk Support Equip	70.261	77.767	71.559		71.559	64.191	64.286	66.257	66.957	771.004	1,537.799
• OPN/9020: Initial and Vendor Direct Spares	0.236	0.171	0.187		0.187	0.174	0.182	0.185	0.189	0.000	6.934
Remarks											
D. Acquisition Strategy											
In 1998, the Tomahawk Baseline Improvement Program (TBIP) transitioned to the Tactical Tomahawk (Block IV) Program. This program is outlined in the Class Justification and Approval (CJ&A No. AIR-22448) signed by the Under Secretary of the Navy on 29 May 1998. The acquisition strategy was to transition the TBIP to Tactical Tomahawk. The Tactical Tomahawk development program was a cost-sharing contract between the Government and the Contractor to add capability to the missile. A multi-year full-rate production contract was awarded in August 2004 for FY 2004-2008 production. The FY09 through FY11 BLOCK IV Missile procurement strategy utilizes a FY 2009 annualized Firm Fixed Price contract, along with two fixed price option years for FY 2010 and FY 2011. FY 2009 through FY 2011 missile procurements have been exercised. The FY 2012 BLOCK IV Missile procurement utilizes an annualized Firm Fixed Price contract, with fully negotiated Firm Fixed Price option year in FY 2013. This contract will award in June 2012.											
Research & Development technology demonstration capabilities (Multiple-Effects Warhead, Anti Surface Warfare) will be potentially introduced after successful qualification and testing. Complete Selective Availability Anti-Spoofing Module/Tactical Tomahawk Weapons Control System integration efforts.											
E. Performance Metrics											
The Navy seeks to improve the Tomahawk cruise missile attack capability against land targets through research and development done predominantly through defense contractors and government field activities.											
Examples in the area of the AUR include development of candidate warheads that will enhance weapon ability to cover all assigned target types, provide a quick reaction response capability for the weapon system, and improved guidance, navigation, control, mission computer two-way satellite communications, and a high anti-jam GPS receiver all in line with state of the art technology.											
In the area of the Weapons Control System, research and development is performed to ensure viability and usability of the system into the future, providing necessary upgrades to meet the Department of Defense Information Technology standards registry to comply with FORCenet requirements and be Internet Protocol Version 6 ready to remain interoperable within Joint Service Architecture, in order to provide battle-group tactical flexibility and responsiveness needed to enable full wartime capability.											

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In the area of the TC2S, continue research and development in order to provide scalable configurations to deploy where and as needed to provide necessary command and control, development necessary to function with national and tactical imagery architectures, decrease mission planning time, and increase the quality and accuracy of each mission for the TWS. All of these research and development efforts contribute to the Navy providing the very best weapon system to the war fighter to accomplish the combat mission.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development						R-1 ITEM NOMENCLATURE PE 0204229N: Tomahawk Mssn Planning Ctr				PROJECT 0545: TOMAHAWK					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hardware	C/CPFF	SSCI:Woburn, MA	0.000	0.000		2.124	Feb 2013	0.000		-		0.000	0.000	2.124	2.124
Systems Engineering - AUR	Reqn	NAVSEA:WNY, DC	30.037	0.275	Mar 2012	0.477	Feb 2013	0.000		-		0.000	0.000	30.789	
Systems Engeeneering - AUR	SS/CPFF	UARC APL:Laurel, MD	0.000	0.000		0.000		0.313	Feb 2014	-		0.313	0.000	0.313	0.313
Systems Engineering - Image Navigation	WR	NAWC-AD:Pax River, MD	0.000	0.000		0.000		0.029	Feb 2014	-		0.029	0.000	0.029	
Systems Engineering - Image Navigation	WR	NAWC-WD:China Lake, CA	0.000	0.000		0.000		0.030	Feb 2014	-		0.030	0.000	0.030	
Systems Engineering - Image Navigation	SS/CPFF	UARC APL:Laurel, MD	0.000	0.000		0.000		0.057	Feb 2014	-		0.057	0.000	0.057	0.057
Systems Engineering - Image Navigation	SS/CPFF	Raytheon:Tucson, AZ	0.000	0.000		0.000		1.640	Feb 2014	-		1.640	0.000	1.640	1.640
Systems Engineering - Image Navigation	WR	NSWC:Dahlgren, VA	0.000	0.000		0.000		0.094	Feb 2014	-		0.094	0.000	0.094	
Prior Year Prod Dev cost no longer funded in FYDP	Various	Various:Various	2,628.097	0.000		0.000		0.000		-		0.000	0.000	2,628.097	
Subtotal			2,658.134	0.275		2.601		2.163		0.000		2.163	0.000	2,663.173	
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Image Navigation - Mission Planning	SS/CPFF	ComGlobal:San Jose, CA	0.000	0.000		0.000		0.386	Feb 2014	-		0.386	Continuing	Continuing	Continuing
Image Navigation - Mission Planning	SS/CPFF	Boeing:St. Louis, MO	0.000	0.000		0.000		2.036	Feb 2014	-		2.036	Continuing	Continuing	Continuing
Image Navigation - Mission Planning	SS/CPFF	BAE Systems:San Diego, CA	0.000	0.000		0.000		0.465	Feb 2014	-		0.465	Continuing	Continuing	Continuing
Image Navigation - Mission Planning	SS/CPFF	SAIC:Arlington, VA	0.000	0.000		0.000		1.693	Feb 2014	-		1.693	Continuing	Continuing	Continuing

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Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Image Navigation - Mission Planning	SS/CPFF	UARC APL:Laurel, MD	0.000	0.314	Jun 2012	0.000		1.870	Feb 2014	-		1.870	Continuing	Continuing	Continuing
TLAM MP Analysis - Mission Planning	SS/CPFF	UARC APL:Laurel, MD	0.000	0.000		0.000		1.060	Feb 2014	-		1.060	0.000	1.060	1.060
Imagery Format Analysis - Mission Planning	SS/CPFF	Navy Sys Mgt Act:Arlington, VA	0.000	0.000		0.000		1.359	Feb 2014	-		1.359	0.000	1.359	1.359
Development Support	WR	NSWC:Dahlgren, VA	2.100	0.145	Feb 2012	0.127	Feb 2013	0.127	Feb 2014	-		0.127	0.000	2.499	
Development Support - Image Navigation	WR	NAWC:China Lake, CA	0.000	0.000		0.000		0.062	Feb 2014	-		0.062	0.000	0.062	
Development Support - AUR	SS/CPFF	SAIC:San Diego, CA	4.277	0.739	Feb 2012	0.934	Feb 2013	0.000		-		0.000	3.325	9.275	9.275
Development Support - Image Navigation	SS/CPFF	SAIC:Arlington, VA	0.000	0.000		0.000		0.177	Feb 2014	-		0.177	0.000	0.177	0.177
Development Support - AUR	WR	Various:Various	1.776	0.110	Feb 2012	0.000		0.000		-		0.000	0.575	2.461	
Development Support - Image Navigation	WR	NSWC:Indian Head, MD	0.000	0.000		0.000		0.062	Feb 2014	-		0.062	0.000	0.062	
Development Support - AUR	WR	NAWC:China Lake, CA	70.533	4.489	Feb 2012	4.800	Feb 2013	0.655	Feb 2014	-		0.655	0.000	80.477	
Soft Dev-Mission Plan Sys TC2S	Reqn	NAVSEA:WNY, DC	21.345	1.113	Feb 2012	1.106	Feb 2013	0.000		-		0.000	6.720	30.284	30.284
Soft Dev-Mission Plan Sys TC2S	Reqn	Navy Sys Mgt Act:VA	12.129	1.190	Feb 2012	1.367	Feb 2013	0.000		-		0.000	6.223	20.909	20.909
Soft Dev-Mission Plan Sys	WR	NAWC:Pax River, MD	0.352	0.206	Feb 2012	0.330	Feb 2013	0.130	Feb 2014	-		0.130	0.000	1.018	
Prior Year Support cost no longer funded in FYDP	Various	Various:Various	229.939	0.000		0.000		0.000		-		0.000	0.000	229.939	
Subtotal			342.451	8.306		8.664		10.082		0.000		10.082			

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy													DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY							R-1 ITEM NOMENCLATURE				PROJECT				
1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development							PE 0204229N: Tomahawk Mssn Planning Ctr				0545: TOMAHAWK				
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation - Image Navigation	WR	NAWC-WD:China Lake, CA	0.000	0.000		0.000		0.043	Feb 2014	-		0.043	0.000	0.043	
Operational Test and Evaluation - Image Navigation	WR	NSWC:PT Hueneme, CA	0.000	0.000		0.000		0.043	Feb 2014	-		0.043	0.000	0.043	
Operational Test and Evaluation - Image Navigation	WR	NSWC:Dahlgren, VA	0.000	0.000		0.000		0.076	Feb 2014	-		0.076	0.000	0.076	
Prior Year T&E cost no longer funded in FYDP	Various	Various:Various	83.412	0.000		0.000		0.000		-		0.000	0.000	83.412	
Subtotal			83.412	0.000		0.000		0.162		0.000		0.162	0.000	83.574	
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Prior Year Mgmt cost no longer funded in FYDP	Various	Various:Various	0.401	0.000		0.000		0.000		-		0.000	0.000	0.401	
Subtotal			0.401	0.000		0.000		0.000		0.000		0.000	0.000	0.401	
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			3,084.398	8.581		11.265		12.407		0.000		12.407			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy

DATE: April 2013

APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy
BA 7: Operational Systems Development

R-1 ITEM NOMENCLATURE

PE 0204229N: Tomahawk Mssn Planning
Ctr

PROJECT

0545: TOMAHAWK

Tomahawk Mission Planning Center	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Acquisition Milestones																												
Milestones	TTWCS V5.4.0 FOC ▼	TT Msl Inte FOC ▼	TC2S 4.3 FOC ▼											TC2S 5.0 FOC ▼		TTWCS V5.4.1 FOC ▼												
Systems Development																												
Software Development					INAV								INAV ECP															
Reviews									INAV PDR ■				INAV CDR ■							INAV OTRR ■				INAV IOC ▲				
Hardware Development													TT P3I															
													TT FRP															
Reviews									TTWCS V5.4.1 TRR ■				TTWCS V5.4.1 IT-CF TRR ■															
Test and Evaluation																												
Technical Evaluation					TC2S 5.0 DT/OT - III G																							
Operational Evaluation																												
Production Milestones																												
Contract Awards																												
Deliveries																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0204229N: <i>Tomahawk Mssn Planning Ctr</i>	PROJECT 0545: <i>TOMAHAWK</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Tomahawk Mission Planning Center</i>				
Acquisition Milestones: Milestones: TTWCS V5.4.0 Full Operational Capability (FOC)	1	2012	1	2012
Acquisition Milestones: Milestones: Tactical Tomahawk Missile Integration FOC	2	2012	2	2012
Acquisition Milestones: Milestones: TC2S 4.3 FOC	3	2012	3	2012
Acquisition Milestones: Milestones: TC2S 5.0 FOC	2	2015	2	2015
Acquisition Milestones: Milestones: TTWCS V5.4.1 FOC	4	2015	4	2015
Systems Development: Reviews: Image Navigation - IOC	4	2017	4	2017
Systems Development: Software Development: Image Navigation	1	2013	4	2013
Systems Development: Software Development: Image Navigation - ECP	1	2014	4	2017
Systems Development: Reviews: Image Navigation - PDR	1	2014	1	2014
Systems Development: Reviews: Image Navigation - CDR	1	2015	1	2015
Systems Development: Reviews: Image Navigation - OTRR	1	2017	1	2017
Systems Development: Hardware Development: TT Preplanned Product Improvement (P3I)	1	2012	4	2017
Systems Development: Hardware Development: Tactical Tomahawk (TACTOM) Full Rate Production, annualized BLOCK IV missile procurements (FY 2010-FY2020)	1	2012	4	2017
Systems Development: Reviews: TTWCS V5.4.1 TRR	2	2013	2	2013
Systems Development: Reviews: TTWCS V5.4.1 IT-CF TRR	4	2014	4	2014
Test and Evaluation: TC2S 5.0 IT-CF- III G	1	2012	1	2015