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Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Navy										Date: February 2015		
Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
1319: Research, Development, Test & Evaluation, Navy I BA 5: System Development & Demonstration (SDD)					PE 0604522N I (U)Air and Missile Defense Radar (AMDR) 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	0.000	-	129.706	241.754	-	241.754	151.870	32.662	28.877	29.868	Continuing	Continuing
3186: Air and Missile Defense Radar	0.000	-	129.706	241.754	-	241.754	151.870	32.662	28.877	29.868	Continuing	Continuing

A. Mission Description and Budget Item Justification

Air and Missile Defense Radar (AMDR): (NOTE: FY14 and prior year funding is in PE 0604501N) The AMDR suite is being developed to fulfill Integrated Air and Missile Defense requirements for multiple ship classes. This suite consists of an S-Band radar (AMDR-S), an X-band radar and a Radar Suite Controller (RSC). Funding will develop AMDR-S and RSC, and integrate these components with an available X band radar. AMDR will provide multi-mission capabilities, simultaneously supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as Area and Self Defense against air and surface threats. For the Ballistic Missile Defense (BMD) capability, increased radar sensitivity and bandwidth over current radar systems are needed to detect, track and support engagements of advanced ballistic missile threats at the required ranges, concurrent with Area and Self Defense against Air and Surface threats. For the Area Air Defense and Self Defense capability, increased sensitivity and clutter capability is needed to detect, react to, and engage stressing Very Low Observable/Very Low Flyer (VLO/VLF) threats in the presence of heavy land, sea, and rain clutter. This effort provides for the development of an active phased array radar with the required capabilities to address the evolving threat. The AMDR suite will obtain performance and technology enhancements throughout its service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA) compliance.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	144.706	247.339	-	247.339
Current President's Budget	-	129.706	241.754	-	241.754
Total Adjustments	-	-15.000	-5.585	-	-5.585
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-15.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Program Adjustments	-	-	-3.900	-	-3.900
• Rate/Misc Adjustments	-	-	-1.685	-	-1.685

Change Summary Explanation

The FY 2016 funding was increased by \$25.100 million to fully fund the efforts to include AMDR on one of the FY16 DDG Flight III ships.

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The FY 2016 funding request was reduced by \$29.000 million to account for the availability of prior year execution balances. This properly phases funding based on the delayed award, due to protest, of the Engineering and Manufacturing Development (EMD) contract. R-2A Change: The titles/categories listed below were all included under Systems Engineering in the PB15 budget exhibit. They have been broken out to provide more detail: - AMDR HARDWARE (RAYTHEON) - AMDR SOFTWARE (RAYTHEON) - AMDR DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (RAYTHEON) - DESIGN, SUPPORT, AND INTEGRATION - TEST AND EVALUATION OPERATIONS AND ANALYSIS - TEST AND EVALUATION ASSETS AND FACILITIES Notes: 1). The AMDR FY13 to FY16 funding profile does not reflect a traditional ramp-up/ramp-down due largely to delays associated with E&MD contract award and the subsequent bid protest. As a result, \$157M of FY13 funds were obligated at contract award in Oct 2013 and funding adjustments in FY14 (-\$115M) and FY15 (-\$15M) have been made to account for the delay and to reflect savings achieved through industry competition. 2). The increased Test and Evaluation costs between FY15 and FY16 are due to the expanded scope of DT-3 testing of the full Engineering Development Model at the Pacific Missile Range Facility in Hawaii in FY16 compared to limited DT-2 testing at the contractor's facility in FY15. In addition, there are a greater number of more complex and expensive targets procured in FY16 to support DT-3 testing compared to targets being procured in FY15. The increased software development costs between FY15 and FY16 are due to the complexity and level of coding performed to support the testing requirements in DT-3.		

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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 0604522N I (U)Air and Missile Defense Radar (AMDR) System				Project (Number/Name) 3186 I Air and Missile Defense Radar			
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
3186: Air and Missile Defense Radar	-	-	129.706	241.754	-	241.754	151.870	32.662	28.877	29.868	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Air and Missile Defense Radar (AMDR): (NOTE: FY14 and prior year funding is in PE 0604501N) The AMDR suite is being developed to fulfill Integrated Air and Missile Defense requirements for multiple ship classes. This suite consists of an S-Band radar (AMDR-S), an X-band radar and a Radar Suite Controller (RSC). Funding will develop AMDR-S and RSC, and integrate these components with an available X band radar. AMDR will provide multi-mission capabilities, simultaneously supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as Area and Self Defense against air and surface threats. For the Ballistic Missile Defense (BMD) capability, increased radar sensitivity and bandwidth over current radar systems are needed to detect, track and support engagements of advanced ballistic missile threats at the required ranges, concurrent with Area and Self Defense against Air and Surface threats. For the Area Air Defense and Self Defense capability, increased sensitivity and clutter capability is needed to detect, react to, and engage stressing Very Low Observable/Very Low Flyer (VLO/VLF) threats in the presence of heavy land, sea, and rain clutter. This effort provides for the development of an active phased array radar with the required capabilities to address the evolving threat. The AMDR suite will obtain performance and technology enhancements throughout its service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA) compliance.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: AMDR HARDWARE (RAYTHEON)	-	9.599	3.608	-	3.608
Articles:	-	-	-	-	-
FY 2014 Accomplishments: N/A					
FY 2015 Plans: - Procure Engineering Development Model (EDM) material					
FY 2016 Base Plans: - Complete procurement of EDM material					
FY 2016 OCO Plans: N/A					
Title: AMDR SOFTWARE (RAYTHEON)	-	13.782	32.461	-	32.461
Articles:	-	-	-	-	-

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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
FY 2014 Accomplishments: N/A						
FY 2015 Plans: - Design, code, test, and integrate software builds to support conduct of DT-2						
FY 2016 Base Plans: - Design, code, test, and integrate software builds to support conduct of DT-3						
FY 2016 OCO Plans: N/A						
Title: AMDR DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (RAYTHEON)		-	41.603	77.791	-	77.791
Articles:		-	-	-	-	-
FY 2014 Accomplishments: N/A						
FY 2015 Plans: - Support working groups (WGs) to facilitate successful integration of the radar with the ship and combat system - Conduct Hardware Critical Design Review (CDR) - Conduct System CDR - Conduct Test Readiness Review (TRR) and AMDR-S String Testing (DT-2) - Deliver the AMDR-S/RSC simulator						
FY 2016 Base Plans: - Support WGs to facilitate successful integration of the radar with the ship and combat system - Deliver EDM to the Pacific Missile Range Facility (PMRF) - Conduct set up, integration and checkout of the EDM at PMRF - Conduct TRR and begin System Integration tests (DT-3) at PMRF						
FY 2016 OCO Plans: N/A						
Title: DESIGN, SUPPORT, AND INTEGRATION		-	29.707	23.705	-	23.705
Articles:		-	-	-	-	-
FY 2014 Accomplishments:						

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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								
FY 2015 Plans: - Support Hardware and System CDRs - Support delivery of the AMDR-S/RSC simulator - Support contractor Test Readiness Review (TRR) and witness contractor DT-2 testing								
FY 2016 Base Plans: - Support delivery of the EDM to PMRF - Conduct the DT-3 TRR and support the DT-3 test activities at PMRF								
FY 2016 OCO Plans: N/A								
Title: TEST AND EVALUATION OPERATIONS AND ANALYSIS				-	6.985	14.306	-	14.306
Articles:				-	-	-	-	-
FY 2014 Accomplishments: N/A								
FY 2015 Plans: - Continue test planning in support of test site requirements - Support contractor TRR and witness contractor DT-2 testing								
FY 2016 Base Plans: - Continue test planning in support of test site requirements - Support delivery and integration of the EDM at PMRF - Support DT-3 TRR and conduct System Integration tests (DT-3) at PMRF								
FY 2016 OCO Plans: N/A								
Title: TEST AND EVALUATION ASSETS AND FACILITIES				-	24.852	86.125	-	86.125
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
- Procure two simple separating ballistic missile targets and other test assets to support DT-3 test efforts - Maintain PMRF test site facility - Provide engineering services for required modifications to DT-3 targets FY 2016 Base Plans: - Procure four complex separating ballistic missile targets and other test assets to support DT-3 test efforts - Maintain PMRF test site facility - Provide engineering services for required modifications to DT-3 targets FY 2016 OCO Plans: N/A					
Title: PROGRAM MANAGEMENT FY 2014 Accomplishments: N/A FY 2015 Plans: - Provide support to Integrated Product Teams (IPTs) and WGs required for program execution of the E&MD contract - Analyze and assess contractor deliverables - Conduct regular Program Management Reviews - Assist in cost, schedule, and performance management, contract administration and oversight, earned value assessment, and risk identification and mitigation - Provide support to the Hardware CDR and System CDR - Provide support to the TRR to facilitate the start of DT-2 testing - Provide support to technical interchange meetings (TIMs) FY 2016 Base Plans: - Provide support to IPTs and WGs required for program execution of the E&MD contract - Support DT-2 test activities - Analyze and assess contractor deliverables - Conduct regular Program Management Reviews - Assist in cost, schedule, and performance management, contract administration and oversight, earned value assessment, and risk identification and mitigation	Articles: - -	3.178 -	3.758 -	- -	3.758 -

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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
- Provide support to the TRR to facilitate the start of DT-3 testing - Provide support to TIMs FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	129.706	241.754	-	241.754

C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• RDT&E/0604501N: AMDR	112.658	-	-	-	-	-	-	-	-	-	992.378
• SCN/2122: DDG 51	2,085.115	2,925.090	3,149.703	-	3,149.703	3,353.936	3,440.080	3,543.571	3,633.657	Continuing	Continuing

Remarks

D. Acquisition Strategy

AMDR: Plans for the Air and Missile Defense Radar are to leverage research and development investments, integrate sufficiently matured advanced technologies from technology risk reduction efforts, and incorporate Open Architecture approaches to develop a scalable radar design with major improvements in power, sensitivity, resistance to natural and man-made environments over current radar systems for simultaneous multi-mission BMD, Area and Self Defense Anti-Air Warfare (AAW). System design will be accomplished by employing proven technologies and commercial standards to lower schedule risk and develop a product with the lowest life-cycle cost.

Program scope consists of the following phases: a Concept Studies phase; a Technology Development phase, which included competitive prototyping; an E&MD phase, which includes completion of a full Engineering Development Model (EDM) for land-based testing; and transition to production. The detailed scope of this acquisition is defined in the approved Milestone B AMDR Acquisition Strategy (AS).

E. Performance Metrics

- Complete Technology Development (TD) phase System Requirements Review, Test Readiness Review, TD Prototype testing, TD System Functional Review, and TD Preliminary Design Review (PDR)
- Achieve Milestone B decision to proceed into E&MD phase
- Award E&MD contract
- Conduct E&MD Phase Integrated Baseline Review
- Conduct Hardware Delta PDR and System Delta PDR
- Conduct Hardware and System CDRs

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- Complete Engineering Development Model (EDM) testing - Achieve Milestone C decision to proceed into production and exercise Low Rate Initial Production (LRIP) options		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
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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
Engineering and Manufacturing Development	C/CPIF	Raytheon : Sudbury, MA	0.000	-		64.984	Feb 2015	113.860	Dec 2015	-		113.860	Continuing	Continuing	Continuing
Subtotal			0.000	-		64.984		113.860		-		113.860	-	-	-
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
Systems Engineering	MIPR	GTRI : Atlanta, GA	0.000	-		0.805	Feb 2015	0.632	Dec 2015	-		0.632	Continuing	Continuing	Continuing
Systems Engineering	SS/CPFF	JHU/APL : Baltimore, MD	0.000	-		8.199	Feb 2015	6.427	Dec 2015	-		6.427	Continuing	Continuing	Continuing
Systems Engineering	MIPR	MIT : Cambridge, MD	0.000	-		1.443	Mar 2015	1.130	Dec 2015	-		1.130	Continuing	Continuing	Continuing
Systems Engineering	WR	NRL : Washington, DC	0.000	-		1.385	Feb 2015	1.085	Dec 2015	-		1.085	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CR : Crane, IN	0.000	-		2.528	Jan 2015	1.982	Nov 2015	-		1.982	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/DD : Dahlgren, VA	0.000	-		6.609	Jan 2015	5.182	Nov 2015	-		5.182	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/PHD : Port Hueneme, CA	0.000	-		2.587	Feb 2015	2.028	Nov 2015	-		2.028	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	SPA-PSS : Alexandria, VA	0.000	-		4.371	Feb 2015	4.263	Dec 2015	-		4.263	Continuing	Continuing	Continuing
Systems Engineering	MIPR	ARL : Adelphi, MD	0.000	-		0.474	Feb 2015	0.457	Dec 2015	-		0.457	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CD : Carderock, MD	0.000	-		0.394	Jan 2015	0.381	Dec 2015	-		0.381	Continuing	Continuing	Continuing
Systems Engineering	WR	CDSA Dam Neck : Dam Neck, VA	0.000	-		0.623	Mar 2015	-		-		-	0.623	1.246	-
Systems Engineering	WR	NSWC/Corona : Corona, CA	0.000	-		0.285	Jan 2015	0.134	Nov 2015	-		0.134	Continuing	Continuing	Continuing

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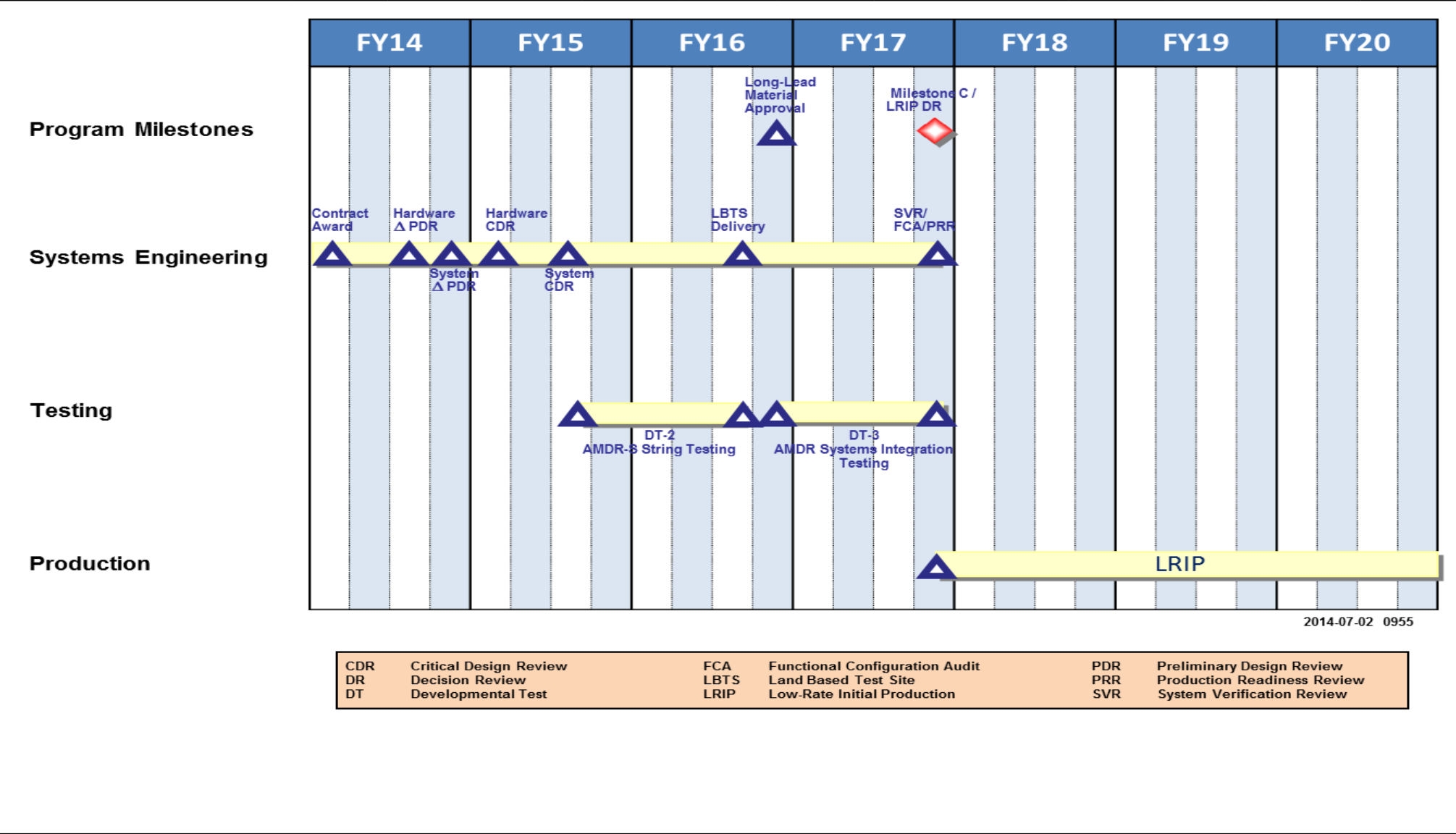
Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
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Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	Allot	DISA : Scott AFB, Illinois	0.000	-		0.004	Nov 2014	0.004	Nov 2015	-		0.004	Continuing	Continuing	Continuing
Subtotal			0.000	-		29.707		23.705		-		23.705	-	-	-
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
Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	0.000	-		0.461	Feb 2015	0.313	Dec 2015	-		0.313	Continuing	Continuing	Continuing
Test and Evaluation	MIPR	GTRI : Atlanta, GA	0.000	-		-		-		-		-	Continuing	Continuing	Continuing
Test and Evaluation	SS/CPFF	JHU/APL : Baltimore, MD	0.000	-		6.089	Feb 2015	2.706	Dec 2015	-		2.706	Continuing	Continuing	Continuing
Test and Evaluation	MIPR	MIT : Cambridge, MD	0.000	-		0.319	Mar 2015	2.560	Dec 2015	-		2.560	Continuing	Continuing	Continuing
Test and Evaluation	WR	NAWC WD : Pt. Mugu, CA	0.000	-		1.168	Dec 2014	0.827	Dec 2015	-		0.827	Continuing	Continuing	Continuing
Test and Evaluation	WR	NRL : Washington, DC	0.000	-		-		1.139	Dec 2015	-		1.139	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC/DD : Dahlgren, VA	0.000	-		1.205	Jan 2015	2.376	Nov 2015	-		2.376	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC/PHD : Port Hueneme, CA	0.000	-		1.900	Feb 2015	3.678	Nov 2015	-		3.678	Continuing	Continuing	Continuing
Test and Evaluation	WR	PMRF : Kekaha, HI	0.000	-		1.134	Dec 2014	11.334	Dec 2015	-		11.334	Continuing	Continuing	Continuing
Test and Evaluation	C/CPFF	SPA-PSS : Alexandria, VA	0.000	-		1.460	Feb 2015	1.433	Dec 2015	-		1.433	Continuing	Continuing	Continuing
Test and Evaluation	WR	SCSC Wallops : Wallops Island, VA	0.000	-		-		-		-		-	Continuing	Continuing	Continuing
Test and Evaluation	WR	SPAWAR : San Diego, CA	0.000	-		-		0.904	Dec 2015	-		0.904	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Navy												Date: February 2015			
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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
Test and Evaluation	WR	NSWC/PHD WS : Port Hueneme, CA	0.000	-		18.101	Feb 2015	73.161	Dec 2015	-		73.161	Continuing	Continuing	Continuing
Subtotal			0.000	-		31.837		100.431		-		100.431	-	-	-
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
Support Management Services	C/CPFF	SPA-PSS : Alexandria, VA	0.000	-		2.043	Feb 2015	2.405	Dec 2015	-		2.405	Continuing	Continuing	Continuing
Travel	Allot	PEOIWS2 : Washington, DC	0.000	-		0.117	Feb 2015	0.121	Dec 2015	-		0.121	Continuing	Continuing	Continuing
Support Management Services	WR	NSWC/DD : Dahlgren, VA	0.000	-		1.018	Jan 2015	1.232	Dec 2015	-		1.232	Continuing	Continuing	Continuing
Subtotal			0.000	-		3.178		3.758		-		3.758	-	-	-
			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			0.000	-		129.706		241.754		-		241.754	-	-	-
Remarks The R-3 cost categories have been expanded from PB15 to show more detail. Specifically, Support and Test and Evaluation categories have been broken out from Product Development.															

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Exhibit R-4, RDT&E Schedule Profile: PB 2016 Navy		Date: February 2015
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Exhibit R-4A, RDT&E Schedule Details: PB 2016 Navy			Date: February 2015
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3186				
Engineering and Manufacturing Development (E&MD) Contract Award	1	2014	1	2014
E&MD Hardware (HW) Delta Preliminary Design Review (PDR)	3	2014	3	2014
E&MD System Delta PDR	4	2014	4	2014
E&MD HW Critical Design Review (CDR)	1	2015	1	2015
E&MD System CDR	3	2015	3	2015
E&MD AMDR-S String Testing (DT-2)	3	2015	3	2016
Engineering Development Model delivered to Land Based Test Site	3	2016	3	2016
LRIP Long Lead Material Approval	4	2016	4	2016
E&MD AMDR System Integration Testing (DT-3)	4	2016	4	2017
System Verification Review/Functional Configuration Audit/Production Readiness Review	4	2017	4	2017
Milestone C/Low Rate Initial Production (LRIP) Decision Review (DR)	4	2017	4	2017
LRIP Production	4	2017	4	2020