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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0204202N / DDG-1000
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,138.003	196.987	103.179	45.642	-	45.642	19.279	15.617	19.721	0.000	0.000	1,538.428
2464: <i>DD(X) Sys Design, Dev & Integration</i>	1,138.003	196.987	103.179	45.642	-	45.642	19.279	15.617	19.721	0.000	0.000	1,538.428

Program MDAP/MAIS Code: 197

A. Mission Description and Budget Item Justification

This Program Element (PE) provides funds for development of the DDG 1000 Class of U.S. Navy surface combatants. The mission of the DDG 1000 class is to provide credible independent forward presence/deterrence and operate as an integral part of Naval, Joint or Combined Maritime Forces. DDG 1000 will provide advanced land attack capability in support of the ground campaign and contribute to Naval, Joint or Combined battlespace dominance in littoral operations. DDG 1000 will establish and maintain surface and sub-surface superiority, provide local air defense, and incorporate signature reduction to operate in all threat environments. DDG 1000 will have seamless Joint Interoperability to integrate all source information for battlespace awareness and weapons direction.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	202.517	103.199	20.126	-	20.126
Current President's Budget	196.987	103.179	45.642	-	45.642
Total Adjustments	-5.530	-0.020	25.516	-	25.516
• Congressional General Reductions	-	-0.020			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-5.530	0.000			
• Program Adjustments	0.000	0.000	26.172	-	26.172
• Rate/Misc Adjustments	0.000	0.000	-0.656	-	-0.656

Change Summary Explanation

FY17: An increase of \$28.1M for the DDG1000 Test and Evaluation effort in accordance with Test and Evaluation Master Plan (TEMP) 1560.

Decrease in DDG 1000 RDTEN by \$1.928M was required for the Department of the Navy to comply with the Bipartisan Budget Act of 2015.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Navy										Date: February 2016		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0204202N / DDG-1000				Project (Number/Name) 2464 / DD(X) Sys Design, Dev & Integration			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
2464: DD(X) Sys Design, Dev & Integration	1,138.003	196.987	103.179	45.642	-	45.642	19.279	15.617	19.721	0.000	0.000	1,538.428
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project encompasses DDG 1000 development efforts required to deliver the Flight I DDG 1000 Class Ships. Major efforts include software requirements analysis, architectural and design code and unit testing, integration, qualification testing, and Independent Verification and Validation (IV&V) for Software Releases; execution of Integrated Power Systems (IPS) and ship control system testing and integration; Live Fire Test and Evaluation (LFT&E), Developmental Testing (DT), and Integrated Testing (IT) in support of the Test and Evaluation Master Plan (TEMP) and development of Tactical Tomahawk Weapon Control System (TTWCS) software. Funding for previous years is included in PE 0604300N and under 0204202N Project Unit 4009, Advanced Gun System (AGS) on DD(X).

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Product / Software Development	99.128	53.361	12.942	0.000	12.942
Articles:	-	-	-	-	-
Description: Product Development/Software Development					
FY 2015 Accomplishments: Continued development of software build to support Post Shakedown Availability (PSA) and Post Delivery Availability (PDA) required capabilities. Continued development of corrections to Hull Mechanical & Electrical (HM&E) and combat systems code in support of ship activation. Supported ship activation and SDTS, PDA and PSA software builds. Developed, integrated and tested as required to correct issues to the existing code base up through Release 8. Populated Data Centers to enable shipboard integrated training capability, supported Overall Combat Systems Operability Test (OCSOT) implementation, and provided system redundancy in the event of operational casualty. Began Aircraft Handling and Securing System (AHSS) development and qualification.					
FY 2016 Plans: Complete software Release 8 to support Sail Away. Develop, integrate, and test as required corrections to HM&E and Mission System code through completion of fully capable Software Delivery in FY16. Continue development of interface specifications of TTWCS. Continue Aircraft Handling and Securing System (AHSS) development and qualification.					
FY 2017 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue development of interface specifications of TTWCS. Completion of Aircraft Handling and Securing System (AHSS) development and qualification.						
FY 2017 OCO Plans: N/A						
Title: Test and Evaluation		97.274	49.318	32.200	0.000	32.200
	Articles:	-	-	-	-	-
Description: Test and Evaluation Master Plan (TEMP) Execution						
FY 2015 Accomplishments: Conducted Evolved Sea Sparrow Missile (ESSM) & Standard Missile 2 (SM2) integration at Wallops Island. Conducted Radar / Total Ship Computing Environment (TSCE) / Cooperative Engagement Capability (CEC) integration tests at Wallops Island. Continued test planning for conduct of ESSM engagements on the Self Defense Test Ship (SDTS). Procured test ordnance SM-2 to conduct Operational Testing (OT) and Follow-on Test and Evaluation (FOT&E) for Anti-Air Warfare Mission Testing. Procured LRLAP rounds and pallets to conduct Integrated Test (ITB4 - Lead Ship) Land Attack Mission. Continued development of Modeling and Simulation (M&S) Probability of Raid Annihilation (PRA) and Measure of Effectiveness (MOE) Test Beds. Initiated test planning for lead ship Developmental Testing (DT) and Integrated Testing (IT).						
FY 2016 Plans: Conduct installation and checkout of equipment on SDTS in support of ITB1-120. Initiate ITB3 Integrated Testing Radar Cross Section Measurements, characterize Medium Frequency Sonar, and perform accuracy check to High Frequency Sonar. Initiate DTB3 / ITB3. Initiate test planning for Operational Evaluation (OPEVAL). Continue test planning for lead ship DT and IT.						
FY 2017 Base Plans: Continue ITB3/ITB4 and OPEVAL Planning for Air Warfare, Joint Fires and Radar Cross Section Testing; Continue PRA Test Bed Development.						
FY 2017 OCO Plans: N/A						
Title: Management Support		0.585	0.500	0.500	0.000	0.500
	Articles:	-	-	-	-	-
Description: Government and Contractor Support and Travel.						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<i>FY 2015 Accomplishments:</i> Continued to provide travel.					
<i>FY 2016 Plans:</i> Continue to provide travel.					
<i>FY 2017 Base Plans:</i> Provide travel.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	196.987	103.179	45.642	0.000	45.642

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• SCN / 2119: DDG 1000	460.849	433.404	271.756	-	271.756	127.421	53.689	27.995	0.000	0.000	12,753.184
• OMN / 3B1K: <i>Specialized Skill Training</i>	3.173	1.018	1.074	-	1.074	3.120	3.198	3.261	3.327	0.000	18.171
• OPN / 0947: DDG 1000 <i>Class Support Equipment</i>	0.000	0.000	33.404	-	33.404	33.278	2.192	2.265	2.308	0.000	73.447
• PANMC / 0198: LRLAP 155MM <i>Long Range Land Attack Projectile</i>	113.092	5.675	0.000	-	0.000	51.620	58.489	46.956	48.178	Continuing	Continuing
• SCN/5110: Outfitting/Post Delivery	60.982	45.621	38.059	-	38.059	34.540	54.705	47.414	39.630	20.791	403.677
• OMN/15BUO: Life <i>Cycle Engineering (IWS)</i>	0.000	8.840	9.111	-	9.111	9.291	4.475	0.000	0.000	0.000	31.717
• OMN/15BRO: Life Cycle <i>Engineering (SEA 21)</i>	5.550	5.544	4.170	-	4.170	5.727	5.820	5.939	6.058	0.000	47.285

Remarks

D. Acquisition Strategy

A revised acquisition strategy has been determined that supports the DDG-1000/DDG-51 restart shipyard allocation workload Memorandum of Agreements (MOAs). Execution of the MOAs shifted primary construction of all three DDG-1000 class ships to Bath Iron Works (BIW). Award of the DDG 1001/1002 to BIW occurred in September 2011.

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E. Performance Metrics

Successfully achieve Initial Operational Capability. Successfully complete Operation Test Readiness Review. Successfully complete Developmental Test/Operational Test.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Navy **Date:** February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0204202N / DDG-1000	Project (Number/Name) 2464 / DD(X) Sys Design, Dev & Integration
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ship Integration Development Phase IV (SW)	SS/CPAF	Raytheon : Tewksbury MA	801.830	78.077	Dec 2014	33.483	Dec 2015	0.000		-		0.000	89.700	1,003.090	-
Ship Integration Development (Prod Dev), TTWCS /ASIST	SS/CPFF	Various : Various	24.417	21.051	Dec 2014	19.878	Dec 2015	12.942	Dec 2016	-		12.942	0.000	78.288	-
Subtotal			826.247	99.128		53.361		12.942		-		12.942	89.700	1,081.378	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SDTS (ITB1-120) / PRA TB	SS/CPFF	Raytheon : Portsmouth, RI	89.225	13.572	Jan 2015	10.525	Dec 2015	7.925	Dec 2016	-		7.925	8.600	129.847	-
T&E Engineering	C/CPIF	CSC : Washington, DC	2.600	0.200	Jan 2015	0.200	Dec 2015	0.200	Jan 2017	-		0.200	0.400	3.600	-
SDTS/PRA/Integrated Test	Various	Various : Various	18.062	4.965	Nov 2014	11.292	Nov 2015	8.745	Nov 2016	-		8.745	0.000	43.064	-
PRA/MOE	C/CPIF	NSMA : Arlington, VA	4.534	2.145	Dec 2014	0.000		5.500	Nov 2016	-		5.500	6.800	18.979	-
Eng/M&S/Cert Agents	WR	NSWC : Dahlgren, VA	7.527	0.200	Nov 2014	0.200	Nov 2015	0.200	Nov 2016	-		0.200	0.400	8.527	-
Integrated Test	WR	NSWC : Bethesda, MD	11.067	0.310	Nov 2014	2.860	Nov 2015	1.096	Nov 2016	-		1.096	2.539	17.872	-
SDTS/PRA/Test Bed/ ESSM Engagement	Various	Various : Various	8.783	2.481	Nov 2014	0.000		0.000		-		0.000	0.000	11.264	-
SDTS	WR	SCSC : Wallops, Is, VA	4.631	1.272	Dec 2014	0.000		0.000		-		0.000	0.000	5.903	-
LFT&E SDTS ESSM	C/CPIF	ROI : Mullica Hills, NJ	7.950	0.000	Dec 2014	0.000		0.000		-		0.000	2.200	10.150	-
ITB3/ITB4/OPEVAL	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	37.227	37.227	-
Integration and Testing	Various	Various : Various	0.000	0.000		8.330	Dec 2015	4.200	Nov 2016	-		4.200	0.000	12.530	-
T&E Engineering	WR	COTF : Norfolk, VA.	5.740	0.891	Jan 2015	2.200	Dec 2015	1.100	Dec 2016	-		1.100	5.150	15.081	-

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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Int Test/Undersea Warfare	WR	Various : Various	0.000	0.000		0.747	Nov 2015	0.000		-		0.000	17.726	18.473	-
LRLAP Test Article Procurement ITB3/ITB4 (EMD)	C/CPIF	BAE : Minneapolis, MN	18.400	35.664	Jan 2015	0.000		0.000		-		0.000	0.000	54.064	-
LFT&E Engineering	C/CPIF	ROI : Mullica Hills, NJ	32.152	0.700	Jan 2015	0.800	Dec 2015	0.000		-		0.000	0.000	33.652	-
ESSM/SM2 Procurement	C/CPIF	Raytheon : Tucson, AZ	25.288	14.250	Jan 2015	0.000		0.000		-		0.000	0.000	39.538	-
MOE Test Bed	WR	NUWC : Various	1.160	0.350	Dec 2014	0.250	Nov 2015	0.000		-		0.000	0.000	1.760	-
SDTS and Integrated Test	Various	PEO IWS : Washington, DC	18.998	20.074	Nov 2014	8.914	Nov 2015	3.234	Nov 2016	-		3.234	23.602	74.822	-
T&E Engineering	WR	NSWC : Panama City, FL	0.330	0.200	Jan 2015	3.000	Nov 2015	0.000		-		0.000	10.100	13.630	-
Subtotal			256.447	97.274		49.318		32.200		-		32.200	114.744	549.983	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Travel	Various	NAVSEA : Washington, DC	2.870	0.585	Dec 2014	0.500	Nov 2015	0.500	Oct 2016	-		0.500	0.500	4.955	-
Government Services Engineering	Various	Various : Various	52.439	0.000		0.000		0.000		-		0.000	0.000	52.439	-
Subtotal			55.309	0.585		0.500		0.500		-		0.500	0.500	57.394	-

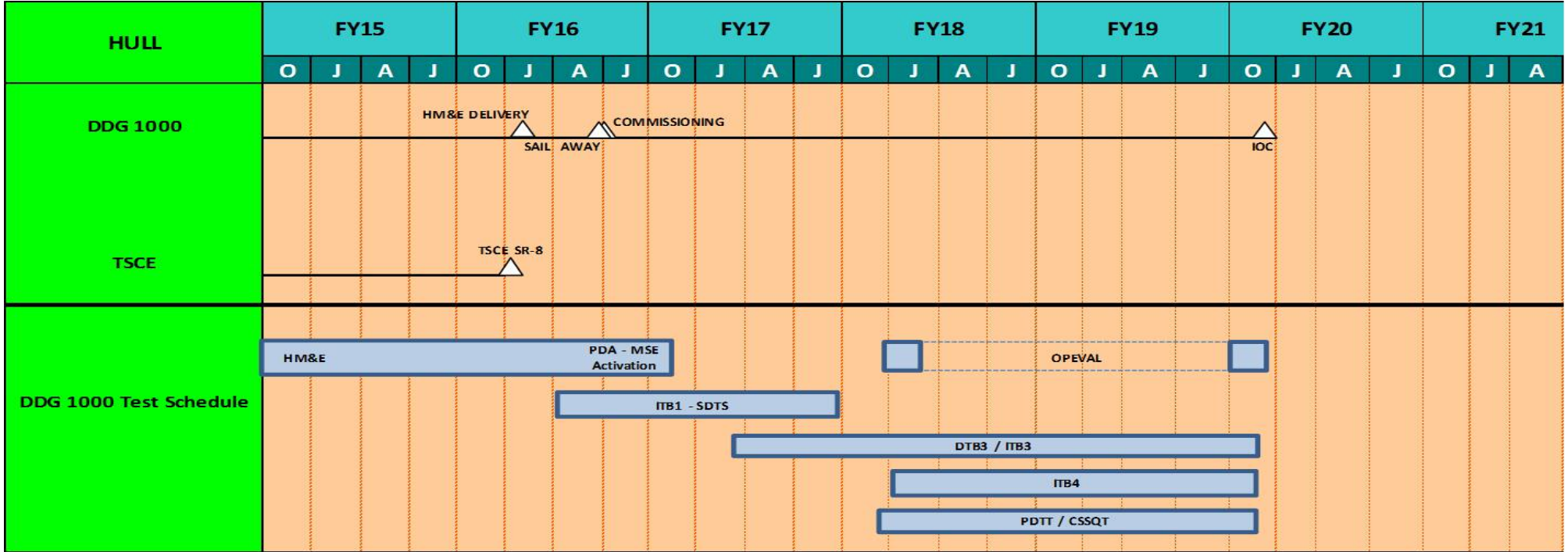
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		1,138.003	196.987	103.179	45.642	-	45.642	204.944	1,688.755	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Navy Date: February 2016

Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0204202N / DDG-1000	Project (Number/Name) 2464 / DD(X) Sys Design, Dev & Integration
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KEY	
IOC	INITIAL OPERATIONAL CAPABILITY
SR	SOFTWARE RELEASE
OPEVAL	OPERATIONAL EVALUATION
▲	COMPLETED EVENT
HM&E	HULL, MECHANICAL & ELECTRICAL
SDTS	SELF-DEFENSE TEST SHIP
PDA	POST DELIVERY AVAILABILITY
PDDT	POST DELIVERY TEST AND TRIALS
CSSQT	COMBAT SYSTEM SHIP QUALIFICATION TRIALS

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Navy		Date: February 2016
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 2464</i>				
Software Release 8 - Spiral Post Shakedown Availability	2	2016	2	2016
Conduct ITB1 - SDTS	3	2016	4	2017
Conduct DTB3 / ITB3	2	2017	1	2020
Conduct ITB4	2	2018	1	2020
OPEVAL	1	2018	1	2020
PDTT / CSSQT	1	2018	1	2020

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