Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy

R-1 Program Element (Number/Name)

Date: February 2018

Appropriation/Budget Activity

1319: Research, Development, Test & Evaluation, Navy I BA 5: System

Development & Demonstration (SDD)

PE 0204202N / DDG-1000

COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	1,384.275	45.187	140.500	161.264	-	161.264	132.337	133.781	88.573	16.617	Continuing	Continuing
2464: DD(X) Sys Design, Dev & Integration	1,384.275	45.187	140.500	161.264	-	161.264	132.337	133.781	88.573	16.617	Continuing	Continuing

Program MDAP/MAIS Code: Project MDAP/MAIS Code(s): 197

A. Mission Description and Budget Item Justification

The FY 2019 funding request was reduced by \$2.000 million to account for the availability of prior year execution balances.

The FY 2019 funding request was reduced by \$.486 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

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)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	45.642	140.500	120.412	-	120.412
Current President's Budget	45.187	140.500	161.264	-	161.264
Total Adjustments	-0.455	0.000	40.852	-	40.852
 Congressional General Reductions 	-	-			
 Congressional Directed Reductions 	-	-			
 Congressional Rescissions 	-	-			
 Congressional Adds 	-	-			
 Congressional Directed Transfers 	-	-			
 Reprogrammings 	-	-			
 SBIR/STTR Transfer 	-0.423	0.000			
 Program Adjustments 	0.000	0.000	42.337	=	42.337
 Rate/Misc Adjustments 	0.000	0.000	-1.485	=	-1.485
 Congressional General Reductions 	-0.032	-	-	-	-
Adjustments					

PE 0204202N: DDG-1000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0204202N / DDG-1000	
Change Summary Explanation		
FY19 increase of 40.852M budget supports DDG 1000 class develoe The FY 2019 funding request was reduced by \$2.0 million to account		
The FY 2019 funding request was reduced by \$.486 million to reflect reforms for Efficiency and Effectiveness that include a lean, account		Office of Management and Budget directed

PE 0204202N: DDG-1000

Exhibit R-2A, RDT&E Project Ju	stification:	PB 2019 N	lavy						Date: February 2018			
Appropriation/Budget Activity 1319 / 5		, , , , , ,						Number/Name) (X) Sys Design, Dev & Integration				
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
2464: <i>DD(X)</i> Sys Design, Dev & Integration	1,384.275	45.187	140.500	161.264	-	161.264	132.337	133.781	88.573	16.617	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 197

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), Integrated Testing (IT), and Operational Test (OT) 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).

Surface Strike

After a comprehensive review of Zumwalt class requirements, Navy decided in November 2017 to refocus the primary mission of the Zumwalt Class Destroyers from Land Attack to Offensive Surface Strike. The funding requested in PB 19 will facilitate this change in mission and add lethal, offensive fires against targets afloat and ashore. These changes include integration of SM-6 capability, Maritime Strike Tomahawk Integration, and organic cryptologic collection equipment (SPECTRAL). In order to maintain the required radar signature, an upgrade in off-board platform communications to the Network Tactical Common Data Link (NTCDL) is also required, paired with the SPECTRAL system.

The Advanced Gun Systems will remain on the ships, but in an inactive status for future use, when a gun round that can affordably meet the desired capability is developed and fielded.

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)			FY 2019	FY 2019	FY 2019
	FY 2017	FY 2018	Base	oco	Total
Title: Product / Software Development	12.935	72.180	73.854	0.000	73.854
Articles:	-	-	_	-	-
Description: Product Development/Software Development					
FY 2018 Plans: Continue development and corrections to Post Release 8 software, which will provide critical capabilities in command and control (GCCS-M), Helicopter integration (MH-60R) and Link 16 interoperability with other fleet assets. Continue with TTWCS Land Attack System Initiation Lab (LASIL) to add capability to test and certify					

PE 0204202N: DDG-1000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy				Date: Febr	uary 2018			
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/PE 0204202N / DDG-1000	Name)	Project (Number/Name) 2464 / DD(X) Sys Design, Dev & Integration					
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities	in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total		
the interface between TTWCS and the TSCE/DDG 1000 combat system. Con Securing System (AHSS) development and qualification.	tinuation of Aircraft Handling and							
FY 2019 Base Plans: Enable the integration, lifecycle management and sustainment of the Total Sh Program of Record software as well as the capability to certify software at the Lab (LASIL). Start development of the Surface Strike and Maritime Targeting (Land Attack System Integration							
FY 2019 OCO Plans: N/A								
FY 2018 to FY 2019 Increase/Decrease Statement: As the Software Development cost decreased, an addition of funding was requestrated Strike Implementation and Maritime Targeting Cell - Afloat (MTC-A)	uired for Product Development to							
The FY 2019 funding request overall was reduced by \$2.0 million to account for execution balances.	or the availability of prior year							
Title: Test and Evaluation	Articles:	32.252	68.320 -	87.410 -	0.000	87.410		
Description: Test and Evaluation Master Plan (TEMP) Execution								
FY 2018 Plans: Tests for ship signature measurements (radar cross section and infrared signal both the Vertical Launching System and the Advanced Gun System, and Antithe Self Defense Test Ship (SDTS). The relevant test events are DTB4-160B, and ITB1-120. Planning for SDTS Anti-Air Warfare (AAW) completion, Probab Test Bed and Integrated Testing. Continue to provide travel.	air warfare live fire test events on , DTB4-161, DTB4-120, ITB4-610,							
FY 2019 Base Plans: Execution of TEMP events for total ship survivability, equipment shock qualific torpedo evasion, calm and heavy weather trials, surface warfare and strike was Maritime Targeting Cell - Afloat.								
FY 2019 OCO Plans: N/A								
FY 2018 to FY 2019 Increase/Decrease Statement:								

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy			Date: February 2018
Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (N	umber/Name)
1319 / 5	PE 0204202N I DDG-1000	2464 I DD	(X) Sys Design, Dev & Integration

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Increase provides additional funds to cover the cost of Maritime Targeting Cell - Afloat					
The FY 2019 funding request overall was reduced by \$2.0 million to account for the availability of prior year execution balances.					
Accomplishments/Planned Programs Subtotals	45.187	140.500	161.264	0.000	161.264

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

			FY 2019	FY 2019	FY 2019					Cost To	
Line Item	FY 2017	FY 2018	Base	<u>000</u>	<u>Total</u>	FY 2020	FY 2021	FY 2022	FY 2023	Complete	Total Cost
• OMN / 3B1K:	706.694	856.077	879.557	51.138	930.695	994.956	1,031.101	1,050.322	1,069.026	0.000	6,638.871
Specialized Skill Training											
• OPN / 0947: <i>DDG 1000</i>	33.404	0.000	89.700	-	89.700	11.330	14.791	24.516	21.635	0.000	195.376
Class Support Equipment											
• OMN/15BUO: Life	8.726	18.966	65.332	-	65.332	53.461	45.666	36.560	36.772	0.000	274.209
Cycle Engineering (IWS))											
• OMN/15BR1: <i>DDG 1000 Life</i>	17.494	5.654	12.022	-	12.022	7.468	11.499	11.415	11.557	0.000	94.598
Cycle Engineering and Sustainment											
• RDTEN/0603795N_2020:	0.000	18.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	18.000
Advanced Gun System Projectile											

Remarks

D. Acquisition Strategy

In October 2010 a revised acquisition strategy had 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.

E. Performance Metrics

Successfully complete Operational Test Readiness Review. Successfully complete Developmental Test/Integrated Test/Live Fire/Operational Test. Successfully achieve Initial Operational Capability.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy

Date: February 2018

Appropriation/Budget Activity R-1 Program Element (Number/Name) Project (Number/Name)

1319 / 5 PE 0204202N / DDG-1000 2464 / DD(X) Sys Design, Dev & Integration

Product Developmen	ıt (\$ in Mi	llions)		FY 2	2017	FY 2	2018	FY 2 Ba		FY 2		FY 2019 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
Ship Integration Development Software	SS/CPAF	Raytheon : Tewksbury MA	911.935	0.000		52.780	Dec 2017	30.387	Dec 2018	-		30.387	0.000	995.102	-
Ship Integration Development (Prod Dev), TTWCS /ASIST	SS/CPFF	Various : Various	65.346	12.935	Dec 2016	19.400	Dec 2017	13.467	Dec 2018	-		13.467	0.000	111.148	-
Surface Strike Implementation	TBD	TBD : TBD	0.000	0.000		0.000		8.300	Jan 2019	-		8.300	Continuing	Continuing	Continuing
Maritime Targeting Cell - Afloat	TBD	TBD : TBD	0.000	0.000		0.000		21.700	Jan 2019	-		21.700	Continuing	Continuing	Continuing
		Subtotal	977.281	12.935		72.180		73.854		-		73.854	Continuing	Continuing	N/A

Test and Evaluation ((\$ in Milli	ons)		FY 2	2017	FY 2	2018		2019 Ise		2019 CO	FY 2019 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
SDTS (ITB1-120) / PRA TB	SS/CPFF	Raytheon : Portsmouth, RI	113.322	7.477	Dec 2016	6.500	Dec 2017	11.300	Dec 2018	-		11.300	4.800	143.399	-
T&E Engineering	C/CPIF	CSC : Washington, DC	3.000	0.200	Jan 2017	0.200	Dec 2017	0.200	Dec 2018	-		0.200	0.200	3.800	-
SDTS/PRA/Integrated Test	Various	Various : Various	34.319	8.745	Nov 2016	6.078	Nov 2017	2.116	Nov 2018	-		2.116	5.411	56.669	-
Advanced Program	C/CPIF	NSMA : Arlington, VA	6.679	5.500	Nov 2016	4.400	Nov 2017	2.400	Nov 2018	-		2.400	2.400	21.379	-
Maritime Targeting Cell - Afloat	TBD	TBD : TBD	0.000	0.000		0.000		9.300	Jan 2019	-		9.300	0.000	9.300	-
Eng/M&S/Cert Agents	WR	NSWC : Dahlgren, VA	7.927	0.200	Nov 2016	0.200	Nov 2017	0.244	Nov 2018	-		0.244	0.200	8.771	-
Integrated Test	WR	NSWC : Bethesda, MD	14.237	1.096	Nov 2016	1.614	Nov 2017	2.450	Nov 2018	-		2.450	1.825	21.222	-
HM&E Systems	WR	NSWC : Philadelphia, PA	0.100	0.500	Nov 2016	0.250	Nov 2017	0.000		-		0.000	0.125	0.975	-
SDTS/PRA/Test Bed/ ESSM Engagement	Various	Various : Various	11.264	0.000		0.000		0.000		-		0.000	0.000	11.264	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy Date: February 2018

Appropriation/Budget Activity R-1 Program Element (Number/Name) Project (Number/Name)

1319 / 5 PE 0204202N / DDG-1000 2464 I DD(X) Sys Design, Dev & Integration

Test and Evaluation ((\$ in Milli	ons)		FY 2	2017	FY 2	2018		2019 ise		2019 CO	FY 2019 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
Threat Assesment/IR	C/CPIF	NRL : Washington, DC	0.000	0.000		1.400	Dec 2017	1.320	Dec 2018	-		1.320	1.800	4.520	-
SDTS	WR	SCSC : Wallops, Is, VA	5.903	0.000		0.000		0.000		-		0.000	0.000	5.903	-
LFT&E	C/CPIF	ROI : Mullica Hills, NJ	7.950	0.000		0.000		0.000		-		0.000	0.000	7.950	-
ITB3/ITB4/OPEVAL	Various	Various : Various	0.000	0.000		16.092	Nov 2017	12.983	Nov 2018	-		12.983	14.800	43.875	-
Integration and Testing	Various	Various : Various	8.230	3.700	Nov 2016	0.023	Dec 2017	0.599	Dec 2018	-		0.599	0.024	12.576	-
T&E Engineering	WR	COTF : Norfolk, VA.	8.831	1.100	Dec 2016	2.516	Dec 2017	2.110	Dec 2018	-		2.110	2.634	17.191	-
Int Test/Undersea Warfare	WR	Various : Various	0.747	0.000		0.000		0.000		-		0.000	0.000	0.747	-
TTWCS	C/CPIF	NAVAIR : Not Specified	0.000	0.000		2.100	Mar 2018	1.805	Mar 2019	-		1.805	3.600	7.505	-
Sonobouys	TBD	NAVAIR : Not Specified	0.000	0.000		0.000		0.300	Dec 2018	-		0.300	0.650	0.950	-
LRLAP Test Article Procurement ITB3/ITB4 (EMD)	C/CPIF	BAE : Minneapolis, MN	54.064	0.000		0.000		0.000		-		0.000	0.000	54.064	-
LFT&E Engineering	C/CPIF	ROI : Mullica Hills, NJ	33.652	0.000		1.600	Dec 2017	0.600	Dec 2018	-		0.600	0.600	36.452	-
ESSM/SM2 Procurement	C/CPIF	Raytheon : Tucson, AZ	39.538	0.000		0.000		0.000		-		0.000	0.000	39.538	-
MOE Test Bed	WR	NUWC : Various	1.760	0.000		1.469	Nov 2017	8.515	Nov 2018	-		8.515	1.657	13.401	-
Component Shock Qualification	WR	Various : Various	0.000	0.000		7.000	Nov 2017	21.000	Nov 2018	-		21.000	21.000	49.000	-
SDTS and Integrated Test	Various	PEO IWS : Washington, DC	47.986	3.234	Nov 2016	14.978	Nov 2017	8.668	Nov 2018	-		8.668	9.298	84.164	-
T&E Engineering	WR	NSWC : Panama City, FL	3.530	0.000		0.900	Nov 2017	0.500	Nov 2018	-		0.500	9.200	14.130	-
FSST	Various	Various : Various	0.000	0.000		0.000		0.000		-		0.000	0.000	0.000	-
Travel	Various	NAVSEA : Washington, DC	3.955	0.500	Apr 2017	1.000	Oct 2017	1.000	Dec 2018	-		1.000	1.000	7.455	-
		Subtotal	406.994	32.252		68.320		87.410		-		87.410	81.224	676.200	N/A

PE 0204202N: DDG-1000 Navy

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy								Date: February 2018				
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				
	Prior Years	FY 2017	FY 2	2018	FY 2019 F Base		FY 2		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	1,384.275	45.187	140.500		161.264		-		161.264	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy

Appropriation/Budget Activity
1319 / 5

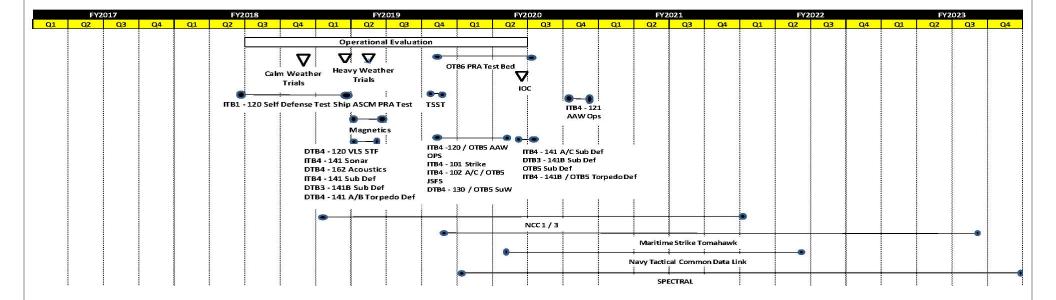
R-1 Program Element (Number/Name)
PE 0204202N / DDG-1000

PE 0204202N / DDG-1000

PE 0204202N / DDG-1000

Date: February 2018

Project (Number/Name)
2464 / DD(X) Sys Design, Dev & Integration



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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy	Date: February 2018		
11	R-1 Program Element (Number/Name)	Project (Number/Name)	
1319 / 5	PE 0204202N / DDG-1000	2464 I DD(X) Sys Design, Dev & Integration	

Schedule Details

	Sta	art	End		
Events by Sub Project	Quarter	Year	Quarter	Year	
Proj 2464					
Conduct ITB1 - SDTS	2	2018	1	2019	
OPEVAL	3	2018	2	2020	
IOC	2	2020	2	2020	
OTB6 PRA Test Bed	3	2019	1	2020	
Calm Weather Trials	4	2018	4	2018	
Heavy Weather Trials	1	2019	1	2019	
TSST	4	2019	4	2019	
Magnetics	1	2019	2	2019	
ITB4-121 AAW Ops	4	2020	4	2020	
DTB4-120 VLS STF; DTB3-610 AGS STF	2	2019	2	2019	
ITB4-120 / OTB5 AAW Ops; ITB4-101 Strike; ITB4-102A/C / OTB5 JSFS; DTB4-130 / OTB5 SuW	4	2019	2	2020	
ITB4-141 Sonar; DTB4-162 Acoustics; ITB4-141 Sub Def	2	2019	2	2019	
DTB3-141B Sub Def; DTB4-141 A/B Torpedo Def	2	2019	2	2019	
ITB4-141 A/C Sub Def; DTB3-141B Sub Def; OTB5 Sub Def; ITB4-141B / OTB5 Torpedo Def	2	2020	3	2020	
NCC 1/3	1	2019	4	2021	
Maritime Stirke Tomahawk	4	2019	3	2023	
Navy Tactical Common Data Link	2	2020	2	2022	
SPECTRAL	1	2020	4	2023	

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