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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Navy **Date:** February 2020

Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604522N / <i>Air & Missile Defense Radar (AMDR) System</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	545.343	26.079	38.349	78.319	-	78.319	87.905	80.385	79.820	81.409	Continuing	Continuing
3186: <i>Air and Missile Defense Radar</i>	545.343	26.079	38.349	78.319	-	78.319	87.905	80.385	79.820	81.409	Continuing	Continuing

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): P384

A. Mission Description and Budget Item Justification

The Air and Missile Defense Radar (AMDR) program consists of the AN/SPY-6(V) Family Of Radars (FoR):

- AN/SPY-6(V)1 (DDG 51 Arleigh Burke class Flight III guided missile destroyer),
- AN/SPY-6(V)2 (Nimitz class Carriers, America class LHA, and San Antonio class LPD),
- AN/SPY-6(V)3 (Ford class Carriers, future Frigate), and
- AN/SPY-6(V)4 (DDG 51 Arleigh Burke class Flight IIA guided missile destroyer backfit).

AN/SPY-6(V)1 and (V)4 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 AN/SPY-6(V) FoR will obtain performance and technology enhancements throughout their service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA).

FY21 includes integration efforts and associated development for AN/SPY-6(V)2 and (V)3 (Enterprise Air Surveillance Radar (EASR)) to integrate with Ship Self Defense System (SSDS) and meet the performance requirements contained in the Battlespace Awareness ICD. AN/SPY-6(V)3 is the primary air surveillance radar supporting ship self-defense, situational awareness and Air Traffic Control (ATC) for Ford class Carriers. For other ship classes, AN/SPY-6(V)2 will be the primary radar for self-defense and situational awareness with the ancillary role of being the backup ATC radar.

FY21 includes funds to backfit Active Electronically-Steered Array (AESA) and digital beamforming technology on a Flight IIA DDG and to continue development of Advanced Distributed Radar (ADR) capability for integration into AN/SPY-6(V). ADR capability will enhance BMD detection performance (for AN/SPY-6(V)1 and (V)4), increase AN/SPY-6(V) sensitivity at large scan angles, and enable AN/SPY-6(V) to operate in receive-only mode in cooperation with another AN/SPY-6(V) radar. This capability will also improve Anti-Air Warfare (AAW) warfighting capabilities for all AN/SPY-6 variants.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	27.008	55.349	78.126	-	78.126
Current President's Budget	26.079	38.349	78.319	-	78.319
Total Adjustments	-0.929	-17.000	0.193	-	0.193
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-17.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.929	0.000			
• Program Adjustments	0.000	0.000	0.001	-	0.001
• Rate/Misc Adjustments	0.000	0.000	0.192	-	0.192

Change Summary Explanation

FY19: decrease of -\$0.929M is due to SBIR transfer.

FY20: decrease of \$17M is due to engineering change testing and evaluation early to need and Advanced Distribution Radar (ADR) development and integration concurrency.

FY21: increase of +\$0.193M is due to minor rate adjustments.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy										Date: February 2020		
Appropriation/Budget Activity 1319 / 5					R-1 Program Element (Number/Name) PE 0604522N / Air & Missile Defense Radar (AMDR) System				Project (Number/Name) 3186 / Air and Missile Defense Radar			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
3186: Air and Missile Defense Radar	545.343	26.079	38.349	78.319	-	78.319	87.905	80.385	79.820	81.409	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
Project MDAP/MAIS Code: P384												

A. Mission Description and Budget Item Justification

The Air and Missile Defense Radar (AMDR) program consists of the AN/SPY-6(V) Family Of Radars (FoR):

- AN/SPY-6(V)1 (DDG 51 Arleigh Burke class Flight III guided missile destroyer),
- AN/SPY-6(V)2 (Nimitz class Carriers, America class LHA, and San Antonio class LPD),
- AN/SPY-6(V)3 (Ford class Carriers, future Frigate), and
- AN/SPY-6(V)4 (DDG 51 Arleigh Burke class Flight IIA guided missile destroyer backfit).

AN/SPY-6(V)1 and (V)4 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 AN/SPY-6(V) FoR will obtain performance and technology enhancements throughout their service life based upon an approach that includes modularity of hardware and software, a scalable design and Open Architecture (OA).

FY21 includes integration efforts and associated development for AN/SPY-6(V)2 and (V)3 (Enterprise Air Surveillance Radar (EASR)) to integrate with Ship Self Defense System (SSDS) and meet the performance requirements contained in the Battlespace Awareness ICD. AN/SPY-6(V)3 is the primary air surveillance radar supporting ship self-defense, situational awareness and Air Traffic Control (ATC) for Ford class Carriers. For other ship classes, AN/SPY-6(V)2 will be the primary radar for self-defense and situational awareness with the ancillary role of being the backup ATC radar.

FY21 includes funds to backfit Active Electronically-Steered Array (AESA) and digital beamforming technology on a Flight IIA DDG and to continue development of Advanced Distributed Radar (ADR) capability for integration into AN/SPY-6(V). ADR capability will enhance BMD detection performance (for AN/SPY-6(V)1 and (V)4), increase AN/SPY-6(V) sensitivity at large scan angles, and enable AN/SPY-6(V) to operate in receive-only mode in cooperation with another AN/SPY-6(V) radar. This capability will also improve Anti-Air Warfare (AAW) warfighting capabilities for all AN/SPY-6 variants.

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / Air & Missile Defense Radar (AMDR) System	Project (Number/Name) 3186 / Air and Missile Defense Radar

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>Title: AN/SPY-6(V)1 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (CONTRACTOR)</p> <p align="right">Articles:</p> <p>FY 2020 Plans:</p> <ul style="list-style-type: none"> - Continue to provide system engineering and Software (SW) support for combat system integration efforts - Continue risk reduction testing at Advanced Radar Development Evaluation Laboratory (ARDEL), including refinement of radar operation functions (calibration, fault detection/fault isolation, environmental adaptation), improving electronic protection capabilities, and continue data collection on ballistic missile defense targets of opportunity <p>FY 2021 Base Plans:</p> <ul style="list-style-type: none"> - Continue to provide system engineering and SW support for combat system integration efforts - Continue risk reduction testing at ARDEL, including refinement of radar operation functions (calibration, fault detection/fault isolation, environmental adaptation), improving electronic protection capabilities, and continue data collection on ballistic missile defense targets of opportunity <p>FY 2021 OCO Plans:</p> <p>N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p> <p>Increase provides for small inflation and/or rate adjustments.</p>	16.731	14.918	15.263	0.000	15.263
<p align="right">Articles:</p> <p>-</p>	-	-	-	-	-
<p>Title: AN/SPY-6(V)1 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (GOVERNMENT)</p> <p align="right">Articles:</p> <p>FY 2020 Plans:</p> <ul style="list-style-type: none"> - Direct and lead independent technical assessments - Support combat system integration and DDG Flt III integration efforts - Continue risk reduction testing at ARDEL, including refinement of radar operations functions, and continue data collection on ballistic missile defense targets of opportunity <p>FY 2021 Base Plans:</p> <ul style="list-style-type: none"> - Continue to direct and lead independent technical assessments - Continue support for combat system integration and DDG Flt III integration efforts 	6.698	7.868	7.881	0.000	7.881
<p align="right">Articles:</p> <p>-</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
- Continue risk reduction testing at ARDEL, including refinement of radar operations functions, and continue data collection on ballistic missile defense targets of opportunity FY 2021 OCO Plans: N/A FY 2020 to FY 2021 Increase/Decrease Statement: Increase provides for small inflation and/or rate adjustments.					
Title: AN/SPY-6(V)1 TEST AND EVALUATION ASSETS AND FACILITIES	2.249	3.422	3.412	0.000	3.412
Articles:	-	-	-	-	-
FY 2020 Plans: - Continue to maintain Pacific Missile Range Facility (PMRF) test site - Continue to provide PMRF range services in support of risk reduction testing at ARDEL - Continue to provide engineering services in support of risk reduction a testing at ARDEL					
FY 2021 Base Plans: - Continue to maintain PMRF test site - Continue to provide PMRF range services in support of risk reduction testing at ARDEL - Continue to provide engineering services in support of risk reduction a testing at ARDEL					
FY 2021 OCO Plans: N/A					
FY 2020 to FY 2021 Increase/Decrease Statement: Decrease due to small rate adjustments.					
Title: ENGINEERING CHANGES/CAPABILITY ENHANCEMENTS AND BACK FIT	0.000	11.700	34.072	0.000	34.072
Articles:	-	-	-	-	-
FY 2020 Plans: ADR efforts: - Define top-level requirements - Initiate interface architecture definition, identify risks and associated mitigation plans - Generate threat data for engineering analysis - Perform medium fidelity modeling and simulation to support requirements generation					
FY 2021 Base Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<p>ADR efforts:</p> <ul style="list-style-type: none"> - Flow down top-level requirements to system-level requirements - Commence combat system integration requirements generation - Identify system architecture changes (as necessary) - Generate high-fidelity models and simulations - Identify risks and associated mitigation plans - Conduct In Process Review (IPR) 1 - Support ADR program reviews, technical design reviews and Technical Interchange Meetings (TIMs) - Form, direct, and facilitate Integrated Product Teams (IPTs) and Working Groups (WGs) required to support ADR integration, combat system integration, and testing <p>AN/SPY-6(V)4 Backfit efforts:</p> <ul style="list-style-type: none"> - Commence non-recurring engineering for a scaled down antenna and power system to replace the AN/SPY-1 on existing Flt IIA ships - Commence performance analysis to update system-level requirements - Commence system design efforts including detailed production-level design and preparation for production - Commence combat system/radar test planning <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to the addition of DDG Flt IIA backfit efforts starting in FY21.</p>					
<p>Title: PROGRAM MANAGEMENT</p> <p align="right">Articles:</p>	0.401	0.441	0.449	0.000	0.449
<p>FY 2020 Plans:</p> <ul style="list-style-type: none"> - Continue to assist in cost, schedule, and performance management, contract management and oversight, earned value assessment and risk identification and mitigation - Continue to provide support to Integrated Product Teams (IPTs) and Working Groups (WGs) required to support I&PS contract - Continue to provide support to combat system integration efforts - Support efforts to award the Hardware Production & Sustainment (HP&S) contract - Update program documentation to implement AN/SPY-6(V) Advanced Radars Acquisition Strategy <p>FY 2021 Base Plans:</p>	-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<ul style="list-style-type: none"> - Continue to assist in cost, schedule, and performance management, contract management and oversight, earned value assessment and risk identification and mitigation - Continue to provide support to IPTs and WGs required to support I&PS contract - Continue to provide support to combat system integration efforts - Continue to support efforts to award the HP&S contract <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase provides for small inflation and/or rate adjustments.</p>						
<p>Title: AN/SPY-6(V)2 and (V)3 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (CONTRACTOR)</p> <p align="right">Articles:</p> <p>FY 2020 Plans: N/A</p> <p>FY 2021 Base Plans:</p> <ul style="list-style-type: none"> - Provide system engineering and software support for initial radar integration efforts with Ship Self Defense System (SSDS) combat system - Continue testing at Wallops Island and in-plant, including refinement of Air Traffic Control support, radar operation functions, improving electronic protection capabilities, and carrier power risk reduction testing - Develop corrective action for hardware defects for co-site interference and arc flash safety <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase due to AN/SPY-6(V)2 and (V)3 efforts being incorporated within the AN/SPY-6 Family of Radars in accordance with the AN/SPY-6(V) Advanced Radars Acquisition Strategy. These efforts are required to update and verify the AN/SPY-6(V)2 and (V)3 configurations to maintain schedule for near-term SSDS combat system and CVN / Amphib integration, test and ship delivery.</p>		0.000	0.000	14.856	0.000	14.856
		-	-	-	-	-
<p>Title: AN/SPY-6(V)2 and (V)3 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (GOVERNMENT)</p>		0.000	0.000	2.386	0.000	2.386
		-	-	-	-	-

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<i>Articles:</i>					
<p>FY 2020 Plans: N/A</p> <p>FY 2021 Base Plans: - Provide oversight of system engineering and software support for initial radar integration efforts with Ship Self Defense System (SSDS) combat system - Coordinate testing at Wallops Island and in-plant, including refinement of Air Traffic Control support, radar operation functions, improving electronic protection capabilities, and carrier power risk reduction testing - Analyze test results for requirements verification and validation - Monitor and approve corrective action for hardware defects for co-site interference and arc flash safety</p> <p>FY 2021 OCO Plans: N/A</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase due to AN/SPY-6(V)2 and (V)3 efforts being incorporated within the AN/SPY-6 Family of Radars in accordance with the AN/SPY-6(V) Advanced Radars Acquisition Strategy. These efforts are required to update and verify the AN/SPY-6(V)2 and (V)3 configurations to maintain schedule for near-term SSDS combat system and CVN / Amphib integration, test and ship delivery.</p>					
Accomplishments/Planned Programs Subtotals	26.079	38.349	78.319	0.000	78.319

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
• SCN/2122: <i>DDG51</i>	5,878.031	5,809.323	1,388.201	-	1,388.201	3,592.416	2,375.950	4,021.363	1,935.953	3,987.100	112,788.539
• 0204228N/2980:	0.000	0.000	1.828	-	1.828	3.920	6.997	33.700	39.443	5,576.933	5,662.821
<i>Items Less Than \$5M</i>											

Remarks

D. Acquisition Strategy
 Plans for the AN/SPY-6(V) Family of Radars (FoR) 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 (for AN/SPY-6(V)1 and (V)4), Area Defense (AD)

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<p>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 included completion of a full EDM for land-based testing; and transition to production. The detailed scope of this acquisition is defined in the approved AN/SPY-6(V) Advanced Radars Acquisition Strategy (AS).</p> <p>Given the software and hardware commonality between the AN/SPY-6(V) FoR, the program will leverage AN/SPY-6(V) FoR contracts to achieve economies of scale in both production and sustainment efforts. AN/SPY-6(V) FoR are designed to be scalable and adaptable across multiple ship classes and mission requirements. The AN/SPY-6(V)1 is the Navy's next generation radar system installed on DDG 51 Flight III that will address Ballistic Missile Defense (BMD) and Air Defense (AD) capability gaps identified in the Maritime Air and Missile Defense of Joint Forces (MAMDJF) Initial Capabilities Document (ICD). AN/SPY-6(V) 2 and 3 (EASR) consist of a rotating radar and 3-fixed face radar and are the newest 3-D air search radars that provide simultaneous Anti-Air Warfare, Anti-Surface Warfare, and Air Traffic Control capabilities for carrier and amphibious class ships with the newest Ship Self Defense System (SSDS)-based combat system, replacing SPS-48/49 and Volume Search Radar. The AN/SPY-6(V)3 is also planned for installation on the future Frigate with the Frigate Weapon System. The AN/SPY-6(V)4 is a scaled radar for DDG 51 FLT IIA ships that will increase Integrated Air and Missile Defense (IAMD) performance against raids of air and ballistic missile threats in adverse environments. The AN/SPY-6(V) FoR architecture and acquisition strategy is intended to drive a lower recurring cost by utilizing the same core technology for variants on multiple ship classes.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604522N / Air & Missile Defense Radar (AMDR) System				Project (Number/Name) 3186 / Air and Missile Defense Radar							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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/Engineering Services	C/CPIF	Raytheon : Marlborough, MA	316.895	0.000		0.000		0.000		-		0.000	0.000	316.895	-
Integration and Production Support	SS/CPFF	Raytheon : Marlborough, MA	8.304	16.707	Dec 2018	22.919	Nov 2019	37.352	Oct 2020	-		37.352	Continuing	Continuing	Continuing
Technology Development	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	0.024	Jul 2019	0.000		0.000		-		0.000	0.000	0.024	-
Systems Engineering	C/CPIF	Lockheed Martin : Moorestown, NJ	0.000	0.000		0.000		2.773	Nov 2020	-		2.773	0.000	2.773	-
Hardware Production & Sustainment	C/FFP	TBD : TBD	0.000	0.000		0.000		16.314	Jun 2021	-		16.314	0.000	16.314	-
Subtotal			325.199	16.731		22.919		56.439		-		56.439	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	0.689	0.248	Apr 2019	0.258	Jan 2020	0.257	Jan 2021	-		0.257	0.000	1.452	-
Systems Engineering	SS/CPFF	JHU/APL : Laurel, MD	18.060	1.002	Mar 2019	3.138	Jan 2020	5.001	Nov 2020	-		5.001	Continuing	Continuing	Continuing
Systems Engineering	MIPR	MIT : Cambridge, MD	2.283	0.692	Jan 2019	1.074	Jan 2020	1.070	Nov 2020	-		1.070	Continuing	Continuing	Continuing
Systems Engineering	WR	NRL : Washington, DC	2.886	0.193	Dec 2018	0.253	Jan 2020	0.252	Nov 2020	-		0.252	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/CR : Crane, IN	4.678	0.055	Dec 2018	0.047	Jan 2020	0.047	Oct 2020	-		0.047	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/DD : Dahlgren, VA	11.137	0.420	Jan 2019	1.552	Jan 2020	4.037	Oct 2020	-		4.037	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC/PHD : Port Hueneme, CA	3.177	0.000		0.060	Dec 2019	0.060	Oct 2020	-		0.060	0.000	3.297	-

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1319 / 5				PE 0604522N / Air & Missile Defense Radar (AMDR) System				3186 / Air and Missile Defense Radar							
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	C/CPIF	SPA (Bridge) : Washington, DC	6.147	0.000		0.000		0.000		-		0.000	0.000	6.147	-
Systems Engineering	MIPR	ARL : Adelphi, MD	0.882	0.000		0.000		0.000		-		0.000	0.000	0.882	-
Systems Engineering	WR	NSWC/CD : Carderock, MD	0.281	0.000		0.000		0.000		-		0.000	0.000	0.281	-
Systems Engineering	WR	NSWC/Corona : Corona, CA	0.485	0.000		0.000		0.000		-		0.000	0.000	0.485	-
Systems Engineering	Allot	DISA : Scott AFB, Illinois	0.016	0.007	Dec 2018	0.004	Dec 2019	0.004	Nov 2020	-		0.004	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC IH : Indian Head, MD	0.668	0.000		0.000		0.000		-		0.000	0.000	0.668	-
Systems Engineering	SS/FFP	Northrop Grumman : Baltimore, MD	0.391	0.000		0.000		0.000		-		0.000	0.000	0.391	-
Systems Engineering	C/FFP	DRS Power & Control Technologies, Inc. : Milwaukee, WI	0.214	0.000		0.000		0.000		-		0.000	0.000	0.214	-
Systems Engineering	C/CPIF	SPA : Washington, DC	0.164	0.452	Nov 2018	0.621	Jan 2020	1.403	Nov 2020	-		1.403	Continuing	Continuing	Continuing
Systems Engineering	SS/CPAF	BIW : Bath, ME	0.000	0.000		0.000		0.846	Nov 2020	-		0.846	0.000	0.846	-
Systems Engineering	MIPR	ONR : Arlington, VA	0.000	0.000		0.916	Jan 2020	0.000		-		0.000	0.000	0.916	-
Systems Engineering	SS/CPFF	Aegis Techrep : Moorestown, NJ	0.000	0.000		0.000		0.585	Nov 2020	-		0.585	0.000	0.585	-
Subtotal			52.158	3.069		7.923		13.562		-		13.562	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	1.233	0.000		0.000		0.000		-		0.000	0.000	1.233	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
1319 / 5				PE 0604522N / Air & Missile Defense Radar (AMDR) System				3186 / Air and Missile Defense Radar							
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	MIPR	GTRI : Atlanta, GA	0.104	0.413	Apr 2019	0.317	Jan 2020	0.316	Jan 2021	-		0.316	0.000	1.150	-
Test and Evaluation	SS/CPFF	JHU/APL : Laurel, MD	18.685	0.126	Mar 2019	0.153	Jan 2020	0.153	Nov 2020	-		0.153	0.000	19.117	-
Test and Evaluation	MIPR	MIT : Cambridge, MD	0.311	0.000		0.000		0.000		-		0.000	0.000	0.311	-
Test and Evaluation	WR	NAWC WD : Pt. Mugu, CA	6.216	0.156	Nov 2018	1.062	Nov 2019	0.190	Nov 2020	-		0.190	0.000	7.624	-
Test and Evaluation	WR	NRL : Washington, DC	2.142	1.261	Dec 2018	1.239	Jan 2020	1.235	Nov 2020	-		1.235	0.000	5.877	-
Test and Evaluation	WR	NSWC/DD : Dahlgren, VA	5.597	0.246	Jan 2019	0.242	Jan 2020	0.721	Nov 2020	-		0.721	0.000	6.806	-
Test and Evaluation	WR	NSWC/PHD : Port Hueneme, CA	5.932	0.764	Dec 2018	0.836	Dec 2019	1.151	Nov 2020	-		1.151	Continuing	Continuing	Continuing
Test and Evaluation	WR	PMRF : Kekaha, HI	11.120	1.009	Jan 2019	0.781	Jan 2020	0.779	Nov 2020	-		0.779	Continuing	Continuing	Continuing
Test and Evaluation	C/CPIF	SPA (Bridge) : Washington, DC	3.043	0.000		0.000		0.000		-		0.000	0.000	3.043	-
Test and Evaluation	WR	NSWC/PHD WS : Port Hueneme, CA	92.912	0.000		0.000		0.000		-		0.000	0.000	92.912	-
Test and Evaluation	WR	NSWC Corona : Corona, CA	4.672	0.232	Nov 2018	0.281	Dec 2019	0.280	Nov 2020	-		0.280	Continuing	Continuing	Continuing
Test and Evaluation	WR	CNA-ONR : Arlington, VA	0.158	0.000		0.000		0.000		-		0.000	0.000	0.158	-
Test and Evaluation	C/BA	MDA : Redstone Arsenal, AL	1.728	0.000		0.000		0.000		-		0.000	0.000	1.728	-
Test and Evaluation	C/CPIF	Engility : Andover, MA	0.432	0.051	Jan 2019	0.061	Jan 2020	0.062	Nov 2020	-		0.062	Continuing	Continuing	Continuing
Test and Evaluation	MIPR	DOI : Boise, ID	1.247	0.784	Dec 2018	1.110	Jan 2020	1.107	Nov 2020	-		1.107	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC Crane : Crane, IN	0.686	0.000		0.000		0.000		-		0.000	0.000	0.686	-
Test and Evaluation	MIPR	AFSEO : Eglin AFB, FL	0.011	0.000		0.000		0.000		-		0.000	0.000	0.011	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Navy **Date:** February 2020

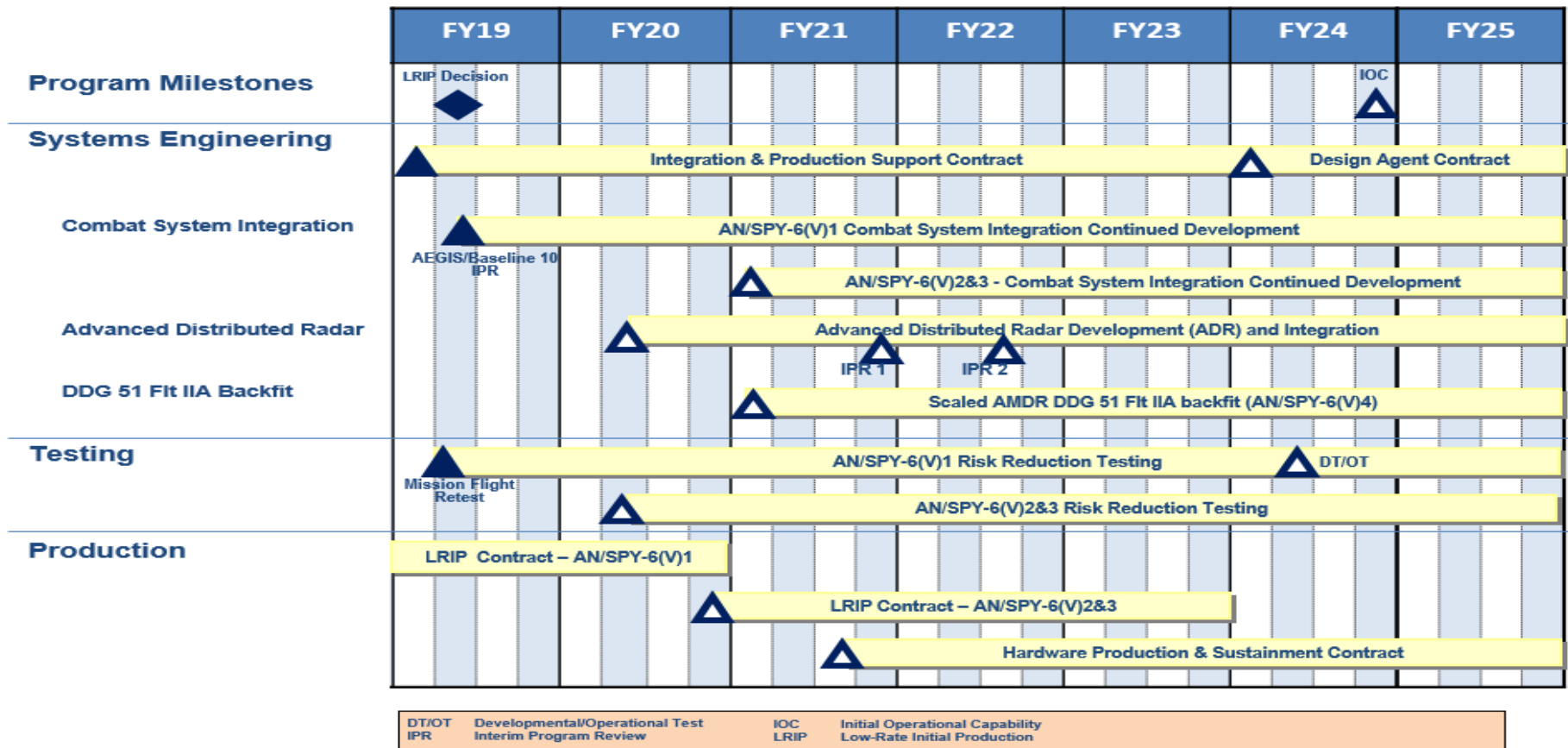
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / Air & Missile Defense Radar (AMDR) System	Project (Number/Name) 3186 / Air and Missile Defense Radar
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Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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	FRCE - PMA 226 : Cherry Point, NC	0.005	0.000		0.000		0.000		-		0.000	0.000	0.005	-
Test and Evaluation	WR	NUWC KP : Keyport, WA	0.367	0.000		0.000		0.000		-		0.000	0.000	0.367	-
Test and Evaluation	WR	COMNAVAIRPAC : San Diego, CA	0.088	0.058	Dec 2018	0.177	Jan 2020	0.177	Nov 2020	-		0.177	Continuing	Continuing	Continuing
Test and Evaluation	WR	NSWC CD : Carderock, MD	1.071	0.000		0.000		0.000		-		0.000	0.000	1.071	-
Test and Evaluation	MIPR	AFRL : Kirtland AFB, NM	0.230	0.000		0.096	Jan 2020	0.096	Nov 2020	-		0.096	0.000	0.422	-
Test and Evaluation	C/CPIF	SPA : Washington, DC	0.228	0.768	Dec 2018	0.700	Jan 2020	0.721	Nov 2020	-		0.721	Continuing	Continuing	Continuing
Test and Evaluation	MIPR	Civil Air Patrol : Montgomery, AL	0.000	0.010	Jun 2019	0.011	Jan 2020	0.011	Nov 2020	-		0.011	Continuing	Continuing	Continuing
Test and Evaluation	WR	NAWC WD TTSD : Pt. Mugu, CA	0.000	0.000		0.000		0.870	Nov 2020	-		0.870	0.000	0.870	-
Subtotal			158.218	5.878		7.066		7.869		-		7.869	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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/CPIF	SPA (Bridge) : Washington, DC	5.120	0.000		0.000		0.000		-		0.000	0.000	5.120	-
Travel	Sub Allot	PEOIS2 : Washington, DC	0.552	0.100	Dec 2018	0.102	Jan 2020	0.105	Jan 2021	-		0.105	Continuing	Continuing	Continuing
Support Management Services	WR	NSWC/DD : Dahlgren, VA	2.149	0.088	Jan 2019	0.111	Jan 2020	0.110	Nov 2020	-		0.110	Continuing	Continuing	Continuing
Support Management Services	C/CPFF	TMB-PSS : Washington, DC	0.309	0.042	Aug 2019	0.043	Jan 2020	0.044	Nov 2020	-		0.044	Continuing	Continuing	Continuing
Support Management Services	C/CPFF	CACI-PSS : Washington, DC	0.822	0.050	Feb 2019	0.053	Jan 2020	0.054	Nov 2020	-		0.054	Continuing	Continuing	Continuing

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / Air & Missile Defense Radar (AMDR) System	Project (Number/Name) 3186 / Air and Missile Defense Radar



DT/OT	Developmental/Operational Test	IOC	Initial Operational Capability
IPR	Interim Program Review	LRIP	Low-Rate Initial Production

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy		Date: February 2020
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604522N / <i>Air & Missile Defense Radar (AMDR) System</i>	Project (Number/Name) 3186 / <i>Air and Missile Defense Radar</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 3186				
Integration and Production Support Contract	1	2019	4	2023
LRIP Contract - AN/SPY-6(V)1	1	2019	4	2020
FY19 LRIP Decision	2	2019	2	2019
AEGIS Baseline 10 IPR	2	2019	2	2019
AN/SPY-6(V)1 Combat System Integration Continued Development	2	2019	4	2025
Mission Flight retest	2	2019	2	2019
AN/SPY-6(V)1 Risk Reduction Testing	2	2019	2	2024
AN/SPY-6(V)2&3 Risk Reduction Testing	2	2020	4	2025
Advanced Distributed Radar (ADR) Development and Integration	2	2020	4	2025
LRIP Contract - AN/SPY-6(V)2&3	4	2020	4	2023
AN/SPY-6(V) 2&3 Combat System Integration Continued Development	1	2021	4	2025
Scaled AMDR DDG51 FLT IIA Backfit (AN/SPY-6(V)4)	1	2021	4	2025
Hardware Production and Sustainment Contract	3	2021	4	2025
ADR IPR 1	4	2021	4	2021
ADR IPR 2	3	2022	3	2022
Design Agent Contract	1	2024	4	2025
AN/SPY-6(V)1 DT/OT	2	2024	4	2025
IOC	4	2024	4	2024