Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604522N *I Air & Missile Defense Radar (AMDR) System*

COST ($ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	571.418	35.694	61.656	96.556	-	96.556	-	-	-	-	-	-
3186: *Air and Missile Defense Radar*	571.418	35.694	61.656	96.556	-	96.556	-	-	-	-	-	-

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 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 capabilities are 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).

AN/SPY-6(V)2 and (V)3 (Enterprise Air Surveillance Radar (EASR)) will provide multi-mission capabilities, simultaneously supporting Air Traffic Control (ATC), situational awareness, and ship self-defense against Air and Surface threats. For these missions, increased clutter capability, short-range detection and tracking, and special weather waveforms are needed. 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 is the primary radar for self-defense and situational awareness with the ancillary role of being the backup ATC radar.

AN/SPY-6(V)4 will provide Active Electronically-Steered Array (AESA) and digital beamforming technology for backfit to Flight IIA DDG. Backfit of SPY-6 technology on DDG 51 FLT IIA commences with non-recurring engineering efforts to scale the radar hardware and software; perform modeling and simulation to update the Continuity of Operations (CONOPS), and; enable SPY-6 IAMD performance capabilities on FLT IIA DDGs.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604522N *I Air & Missile Defense Radar (AMDR) System*

Advanced Distributed Radar (ADR) is a software enhancement that will enable multi-ship cooperative radar operations in order to support Distributed Maritime Operations (DMO) for the SPY-6 FoR. ADR initial capabilities transition Receive Only Cooperative Radar and Networked Cooperative Radar (NCR) software capabilities from Office of Naval Research to tactical development, implementation and testing. ADR software enhancements will increase radar detection performance for Integrated Air and Missile Defense capabilities and enable operations with radars in receive-only mode in cooperation with other AN/SPY-6(V) radars.

For FY22, the efforts include:
SPY-6(V)1 integration efforts and associated development to support AEGIS Baseline 10 integration and AEGIS Light Off (ALO), advanced radar capability testing at the Advanced Radar Development Evaluation Laboratory (ARDEL), and integration with the AEGIS Virtual Test Environment (VTE). 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. This includes continued testing at the Land Based Test Site and integration efforts with the SYY-1 Air Traffic Control System and Cooperative Engagement
Capability. Testing and final implementation of the corrective action for hardware defects for co-site interference and arc flash safety will be accomplished. AN/SPY-6(V)4 FLT IIA backfit efforts will continue with ship integration studies (power, cooling, arrangements), refinement of radar prime power design, continue development of Integration Control Documents (ICDs), commence systems engineering efforts to include modeling and simulation and requirements flowdown to align with FLT IIA requirements. ADR efforts will continue with system engineering activities to generate a requirements notebook in support of system-level requirements development, continue modeling and simulation activities in support of system-level requirements development, and support technology transition activities.

B. Program Change Summary ($ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Previous President's Budget	38.349	78.319	87.905	-	87.905
Current President's Budget	35.694	61.656	96.556	-	96.556
Total Adjustments	-2.655	-16.663	8.651	-	8.651
• Congressional General Reductions	-	-0.349			
• Congressional Directed Reductions	-	-16.314			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.218	0.000			
• SBIR/STTR Transfer	-1.437	0.000			
• Program Adjustments	0.000	0.000	10.281	-	10.281
• Rate/Misc Adjustments	0.000	0.000	-1.630	-	-1.630

Change Summary Explanation

FY20: Decrease of $1.218M due to a BTR to support other higher priority Navy requirements. Decrease of $1.437M is due to SBIR reductions.
FY21: Decrease of $16.314M is due to hardware and sustainment early to need. Decrease of $.349M is due to Undistributed Reduction - Excess to Need.

Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy	Date: May 2021
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0604522N *I Air & Missile Defense Radar (AMDR) System*

FY22: Increase of $10.281M is due to SPY-6(V)2 and SPY-6(V)3 Enterprise Air Surveillance Radar (EASR) Integration. Decrease of $1.63M is due to rate/misc adjustments for NWCF rate adjustments, manpower savings, Inflation Rates for Non-Pay, Non-Fuel Purchases, and re-distribution of Economic Assumptions.

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy												Date: May 2021
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 2020**	**FY 2021**	**FY 2022 Base**	**FY 2022 OCO**	**FY 2022 Total**	**FY 2023**	**FY 2024**	**FY 2025**	**FY 2026**	**Cost To Complete**	**Total Cost**
3186: *Air and Missile Defense Radar*	571.418	35.694	61.656	96.556	-	96.556	-	-	-	-	-	-
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 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 capabilities are 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).

AN/SPY-6(V)2 and (V)3 (Enterprise Air Surveillance Radar (EASR)) will provide multi-mission capabilities, simultaneously supporting Air Traffic Control (ATC), situational awareness, and ship self-defense against Air and Surface threats. For these missions, increased clutter capability, short-range detection and tracking, and special weather waveforms are needed. 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 is the primary radar for self-defense and situational awareness with the ancillary role of being the backup ATC radar.

AN/SPY-6(V)4 will provide Active Electronically-Steered Array (AESA) and digital beamforming technology for backfit to Flight IIA DDG. Backfit of SPY-6 technology on DDG 51 FLT IIA commences with non-recurring engineering efforts to scale the radar hardware and software; perform modeling and simulation to update the CONOPS, and; enable SPY-6 IAMD performance capabilities on FLT IIA DDGs.

Advanced Distributed Radar (ADR) is a software enhancement that will enable multi-ship cooperative radar operations in order to support Distributed Maritime Operations (DMO) for the SPY-6 FoR. ADR initial capabilities transition Receive Only Cooperative Radar and Networked Cooperative Radar (NCR) software capabilities

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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*

from Office of Naval Research to tactical development, implementation and testing. ADR software enhancements will increase radar detection performance for Integrated Air and Missile Defense capabilities and enable operations with radars in receive-only mode in cooperation with other AN/SPY-6(V) radars.

For FY22, the efforts include:
SPY-6(V)1 integration efforts and associated development to support AEGIS Baseline 10 integration and AEGIS Light Off (ALO), advanced radar capability testing at the Advanced Radar Development Evaluation Laboratory (ARDEL), and integration with the AEGIS Virtual Test Environment (VTE). 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. This includes continued testing at the Land Based Test Site and integration efforts with the SYY-1 Air Traffic Control System and Cooperative Engagement
Capability. Testing and final implementation of the corrective action for hardware defects for co-site interference and arc flash safety will be accomplished. AN/SPY-6(V)4 FLT IIA backfit efforts will continue with ship integration studies (power, cooling, arrangements), refinement of radar prime power design, continue development of Integration Control Documents (ICDs), commence systems engineering efforts to include modeling and simulation and requirements flowdown to align with FLT IIA requirements. ADR efforts will continue with system engineering activities to generate a requirements notebook in support of system-level requirements development, continue modeling and simulation activities in support of system-level requirements development, and support technology transition activities.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Title: AN/SPY-6(V)1 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (CONTRACTOR)	14.915	28.194	17.661	0.000	17.661
Articles:	-	-	-	-	-
FY 2021 Plans: - 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 **Increase in FY 2021 funding is due to more In-Plant integration and verification efforts required.					
FY 2022 Base Plans: - 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					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Perform refresh/replace of infrastructure at Pacific Missile Range Facility (PMRF) test site, including facility power architecture. ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Decrease aligns with planned development efforts.					
Title: AN/SPY-6(V)1 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (GOVERNMENT) ***Articles:*** ***FY 2021 Plans:*** - Continue to direct and lead independent technical assessments - Continue support for combat system integration and DDG Flt III integration efforts including support of DDG 125 AEGIS Light Off (ALO) - Continue risk reduction testing at ARDEL, including refinement of radar operations functions, and continue data collection on ballistic missile defense targets of opportunity **Decrease in FY 2021 funding is due to re-assigning JHU/APL from core AMDR efforts to Backfit and ADR efforts. ***FY 2022 Base Plans:*** - Continue to direct and lead independent technical assessments - Continue support for combat system integration and DDG Flt III integration efforts including support of DDG 125 AEGIS Light Off (ALO) - Continue risk reduction testing at ARDEL, including refinement of radar operations functions, and continue data collection on ballistic missile defense targets of opportunity ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase aligns with planned development efforts.	6.076 -	6.126 -	11.011 -	0.000 -	11.011 -
Title: AN/SPY-6(V)1 TEST AND EVALUATION ASSETS AND FACILITIES ***Articles:***	3.474 -	3.542 -	5.422 -	0.000 -	5.422 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
FY 2021 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 **Increase in FY 2021 funding is due to infrastructure corrective maintenance at PMRF needed to stay fully operational. ***FY 2022 Base Plans:*** - Perform refresh/replace of infrastructure at PMRF test site, including facility power architecture - 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 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase associated with replacing power infrastructure at test site.					
Title: ENGINEERING CHANGES/CAPABILITY ENHANCEMENTS AND BACK FIT	3.352	8.722	34.788	0.000	34.788
Articles:	-	-	-	-	-
FY 2021 Plans: ADR Efforts: - Continue system engineering activities to generate a requirements notebook in support of system-level requirements development - Continue modeling and simulation activities in support of requirements development - Support technology transition activities AN/SPY-6(V)4 Backfit efforts: - Commence system-level requirements development - Commence modeling and simulation activities in support of requirements development - Commence Technical Data Package (TDP) maintenance					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Commence high level analysis in support of ship HM&E studies ***FY 2022 Base Plans:*** ADR Efforts: - Continue system-level requirements development - Commence combat system integration requirements generation - Identify system architecture changes (as necessary) - Continue modeling and simulation activities in support of requirements development - Identify risks and associated mitigation plans - Conduct In Process Review (IPR) 1 - Continue to support technology transition activities - Form, direct, and facilitate Integrated Product Teams (IPTs) and Working Groups (WGs) required to support ADR integration, combat system integration, and testing - Commence software development (NCR and Receive Only Cooperative Radar (ROCR)) AN/SPY-6(V)4 Backfit: - Continue system-level requirements development - Continue modeling and simulation activities in support of system-level requirements development - Continue Technical Data Package (TDP) maintenance - Commence system engineering in support of software development to scale (V)1 capabilities for DDG Mod - Commence support for transition to production activities for production readiness - Commence combat system/radar test planning ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase associated with commencement of software development for ADR and backfit.					
Title: PROGRAM MANAGEMENT	0.318	0.399	1.712	0.000	1.712
Articles:	-	-	-	-	-
FY 2021 Plans: - Continue to assist in cost, schedule, and performance management, contract management and oversight, earned value assessment and risk identification and mitigation					

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Continue to provide support to IPTs and WGs required to support Integration & Production Support (I&PS) contract - Continue to provide support to combat system integration efforts - Continue to support efforts to award the Hardware Production & Sustainment (HP&S) contract ***FY 2022 Base Plans:*** - 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 ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase aligns with planned development efforts.					
Title: AN/SPY-6(V)2 and (V)3 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (CONTRACTOR) ***Articles:*** ***FY 2021 Plans:*** - Continue providing 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, combat system land based test events, and carrier power risk reduction testing - Implement corrective actions for hardware defects for co-site interference and arc flash **Increase in FY 2021 funding is due to funding Original Equipment Manufacturer (OEM) to implement corrective actions for hardware defects for co-site interference and arc flash. ***FY 2022 Base Plans:***	7.559 -	13.886 -	22.607 -	0.000 -	22.607 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Provide radar system engineering support to design Cross Product Teams (CPTs) for trade studies, requirements generation and trace, and modeling and simulation for Combat System (CS) integration efforts with Ship Self Defense System (SSDS) combat system - Provide radar software development for CS 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 air warfare and electronic protection capabilities, combat system land based test events, and carrier power risk reduction testing - Continue implementation of corrective actions for hardware defects for co-site interference - Support operation of radar emulator at Combat System Engineering Agent (CSEA) lab in Moorestown, NJ, including combat system integration test support ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase associated with Systems Engineering and software efforts related to combat system integration.					
Title: AN/SPY-6(V)2 and (V)3 DESIGN, SUPPORT, INTEGRATION, TEST AND EVALUATION (GOVERNMENT) ***Articles:*** ***FY 2021 Plans:*** - Continue providing 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, combat system land based test events, 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 **Decrease in FY 2021 funding is due to redirection of funds to OEM to implement corrective actions for hardware defects for co-site interference and arc flash. ***FY 2022 Base Plans:***	0.000 -	0.787 -	3.355 -	0.000 -	3.355 -

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- 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 air warfare and electronic protection capabilities, combat system land based test events, and carrier power risk reduction testing - Operate radar EDM at Wallops Island - Analyze test results for requirements verification and validation - Monitor and approve corrective action for hardware defects for co-site interference ***FY 2022 OCO Plans:*** N/A ***FY 2021 to FY 2022 Increase/Decrease Statement:*** Increase associated with increased software, systems engineering and T&E support and oversight needed for combat systems integration activities taking place at CSEA and LBTS.					
Accomplishments/Planned Programs Subtotals	35.694	61.656	96.556	0.000	96.556

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• SCN/2122: *DDG51*	5,809.323	3,079.201	3,661.969	-	3,661.969	-	-	-	-	-	-
• 0204228N/2980: *Items Less Than $5M*	0.000	1.828	3.913	-	3.913	-	-	-	-	-	-
• SCN/2128: *FFG(X)*	1,281.177	1,053.123	1,157.000	-	1,157.000	-	-	-	-	-	-
• SCN/2001: *Carrier Replacement Program*	1,062.000	1,068.544	1,363.930	-	1,363.930	-	-	-	-	-	-
• SCN/2086: *CVN Refueling Overhauls*	651.526	2,093.837	2,365.264	-	2,365.264	-	-	-	-	-	-
• SCN/3041: *LHA*	0.000	500.000	68.637	-	68.637	-	-	-	-	-	-
• SCN/3036: *LPD*	0.000	30.578	53.682	-	53.682	-	-	-	-	-	-
• 0603599N/3086: *Frigate*	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTEN/0604501N/3236: *Above Water Sensors/EASR*	1.857	0.000	0.000	-	0.000	-	-	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy		Date: May 2021
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*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• O&MN/1C1C/0702228N: *O&MN AMDR*	0.000	15.795	30.955	-	30.955	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

The AN/SPY-6(V) Advanced Radars Acquisition Strategy (AS) supports current and future variants to reflect a Family of Radars (FoR) nomenclatured AN/SPY-6(V). This includes new construction DDG 51 Flight (FLT) III units beyond FY 2020, backfit to the modernization effort for DDG 51 FLT IIA units, and Enterprise Air Surveillance Radar (EASR) for the new construction and modernization of aircraft carriers and large deck amphibious ships. Given the software and hardware commonality between the AN/SPY-6(V) FoR, Program Executive Office (PEO) Integrated Warfare Systems (IWS) 2.0 will leverage AN/SPY-6(V) FoR contracts to achieve economies of scale in both production and sustainment efforts. This AS lays out strategies for the Production and Deployment phases and beyond. The AN/SPY-6(V) Hardware Production & Sustainment (HP&S) contract for production units FY 2021-2025 includes AN/SPY-6(V)1, AN/SPY-6(V)2, AN/SPY-6(V)3, and AN/SPY-6(V)4 and is anticipated to be awarded in FY 2021 after a full and open competition leveraging the Technical Data Package (TDP) and data rights obtained through the AMDR EMD/LRIP 1 and EASR EMD/LRIP contracts. The AN/SPY-6(V) Design Agent (DA) Integration and Production Support (I&PS) contract will provide DA support for continued combat system integration and test, sustaining engineering, training, software maintenance, interim depot maintenance support, and field engineering services on a sole source basis from the current system integrator, Raytheon IDS. A follow-on AN/SPY-6(V) DA contract will be competed under full and open competition.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering and Manufacturing Development/Engineering Services	C/CPIF	Raytheon : Marlborough, MA	318.428	7.559	Apr 2020	13.886	Nov 2020	22.607	Nov 2021	-		22.607	-	-	-
Integration and Production Support	SS/CPFF	Raytheon : Marlborough, MA	24.246	15.776	Nov 2019	32.122	Oct 2020	42.534	Oct 2021	-		42.534	-	-	-
Technology Development	C/FPIF	Lockheed Martin : Moorestown, NJ	0.024	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	C/CPIF	Lockheed Martin : Moorestown, NJ	0.000	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	342.698	23.335		46.008		65.141		-		65.141	-	-	N/A

Remarks

FY21 Product Development decreased from PB21 due to removing HP&S second source qualification effort. LM ADR and Backfit efforts were removed, and Raytheon I&PS BL10 integration efforts were increased

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	MIPR	GTRI : Atlanta, GA	0.935	0.000		0.145	Jan 2021	0.000		-		0.000	-	-	-
Systems Engineering	SS/CPFF	JHU/APL : Laurel, MD	18.942	2.789	Jan 2020	3.911	Nov 2020	7.903	Nov 2021	-		7.903	-	-	-
Systems Engineering	MIPR	MIT : Cambridge, MD	2.749	0.954	Jan 2020	1.250	Nov 2020	1.171	Nov 2021	-		1.171	-	-	-
Systems Engineering	WR	NRL : Washington, DC	3.015	0.182	Feb 2020	0.301	Nov 2020	0.690	Nov 2021	-		0.690	-	-	-
Systems Engineering	WR	NSWC/CR : Crane, IN	4.734	0.042	Feb 2020	0.000		0.000		-		0.000	-	-	-
Systems Engineering	WR	NSWC/DD : Dahlgren, VA	11.236	1.139	Feb 2020	1.089	Oct 2020	9.787	Oct 2021	-		9.787	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NSWC/PHD : Port Hueneme, CA	3.177	0.047	Dec 2019	0.023	Oct 2020	0.009	Oct 2021	-		0.009	-	-	-
Systems Engineering	C/CPIF	SPA (Bridge) : Washington, DC	6.147	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	MIPR	ARL : Adelphi, MD	0.883	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	WR	NSWC/CD : Carderock, MD	0.281	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	WR	NSWC/Corona : Corona, CA	0.486	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	Allot	DISA : Scott AFB, Illinois	0.020	0.005	Dec 2019	0.009	Nov 2020	0.009	Nov 2021	-		0.009	-	-	-
Systems Engineering	WR	NSWC IH : Indian Head, MD	0.668	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	SS/FFP	Northrop Grumman : Baltimore, MD	0.391	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	C/FFP	DRS Power & Control Technologies, Inc. : Milwaukee, WI	0.214	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	C/CPIF	SPA : Washington, DC	1.587	0.621	Apr 2020	0.516	Nov 2020	0.959	Nov 2021	-		0.959	-	-	-
Systems Engineering	SS/CPAF	BIW : Bath, ME	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	MIPR	ONR : Arlington, VA	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	SS/CPFF	Aegis Techrep : Moorestown, NJ	0.000	0.000		0.000		0.000		-		0.000	-	-	-
Systems Engineering	WR	NSMA : Washington, DC	0.838	0.000		0.285	Nov 2020	0.285	Nov 2021	-		0.285	-	-	-
		Subtotal	56.303	5.779		7.529		20.813		-		20.813	-	-	N/A

Remarks

FY21 Support efforts decreased from PB21 primarily due to reducing ADR/Backfit efforts at multiple Field Activities. Funds were realigned to Raytheon I&PS BL10 Integration efforts

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	1.232	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	MIPR	GTRI : Atlanta, GA	0.513	0.000		0.189	Jan 2021	0.340	Jan 2022	-		0.340	-	-	-
Test and Evaluation	SS/CPFF	JHU/APL : Laurel, MD	18.814	0.136	Apr 2020	0.073	Nov 2020	0.074	Nov 2021	-		0.074	-	-	-
Test and Evaluation	MIPR	MIT : Cambridge, MD	0.311	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	NAWC WD : Pt. Mugu, CA	6.300	0.169	Nov 2019	0.173	Nov 2020	0.168	Nov 2021	-		0.168	-	-	-
Test and Evaluation	WR	NRL : Washington, DC	3.393	0.963	Feb 2020	1.356	Nov 2020	0.617	Nov 2021	-		0.617	-	-	-
Test and Evaluation	WR	NSWC/DD : Dahlgren, VA	5.778	0.161	Feb 2020	0.140	Nov 2020	0.996	Nov 2021	-		0.996	-	-	-
Test and Evaluation	WR	NSWC/PHD : Port Hueneme, CA	6.691	0.641	Dec 2019	0.911	Nov 2020	1.177	Nov 2021	-		1.177	-	-	-
Test and Evaluation	WR	PMRF : Kekaha, HI	11.090	1.128	Jan 2020	1.662	Nov 2020	1.598	Nov 2021	-		1.598	-	-	-
Test and Evaluation	C/CPIF	SPA (Bridge) : Washington, DC	3.043	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	NSWC/PHD WS : Port Hueneme, CA	92.377	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	NSWC Corona : Corona, CA	4.903	0.342	Dec 2019	0.655	Nov 2020	0.999	Nov 2021	-		0.999	-	-	-
Test and Evaluation	WR	CNA-ONR : Arlington, VA	0.157	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	C/BA	MDA : Redstone Arsenal, AL	1.663	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	C/CPIF	Engility : Andover, MA	0.483	0.078	Apr 2020	0.095	Nov 2020	0.000		-		0.000	-	-	-
Test and Evaluation	MIPR	DOI : Boise, ID	2.025	0.986	Jan 2020	0.883	Nov 2020	0.856	Nov 2021	-		0.856	-	-	-
Test and Evaluation	WR	NSWC Crane : Crane, IN	0.686	0.000		0.000		0.000		-		0.000	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy		Date: May 2021
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*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	MIPR	AFSEO : Eglin AFB, FL	0.011	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	FRCE - PMA 226 : Cherry Point, NC	0.005	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	NUWC KP : Keyport, WA	0.367	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	COMNAVAIRPAC : San Diego, CA	0.056	0.063	Feb 2020	0.152	Nov 2020	0.147	Nov 2021	-		0.147	-	-	-
Test and Evaluation	WR	NSWC CD : Carderock, MD	1.051	0.000		0.000		0.000		-		0.000	-	-	-
Test and Evaluation	MIPR	AFRL : Kirtland AFB, NM	0.230	0.111	Feb 2020	0.000		0.000		-		0.000	-	-	-
Test and Evaluation	C/CPIF	SPA : Washington, DC	1.050	0.700	Apr 2020	0.676	Nov 2020	0.649	Nov 2021	-		0.649	-	-	-
Test and Evaluation	MIPR	Civil Air Patrol : Montgomery, AL	0.004	0.009	Apr 2020	0.015	Nov 2020	0.017	Nov 2021	-		0.017	-	-	-
Test and Evaluation	WR	NAWC WD TTSD : Pt. Mugu, CA	0.000	0.775	Nov 2019	0.000		0.000		-		0.000	-	-	-
Test and Evaluation	WR	SCSC Wallops : Wallops Island, VA	0.000	0.000		0.739	Nov 2020	1.162	Nov 2021	-		1.162	-	-	-
		Subtotal	162.233	6.262		7.719		8.800		-		8.800	-	-	N/A

Remarks

FY21 Test and Evaluation efforts increased from PB21 primarily due to increasing test site operations and infrastructure costs at PMRF and SCSC Wallops.

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total 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	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy			Date: May 2021
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*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2020 Cost	FY 2020 Award Date	FY 2021 Cost	FY 2021 Award Date	FY 2022 Base Cost	FY 2022 Base Award Date	FY 2022 OCO Cost	FY 2022 OCO Award Date	FY 2022 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	Sub Allot	PEOIWS2 : Washington, DC	0.644	0.004	Aug 2020	0.045	Jan 2021	0.092	Jan 2022	-		0.092	-	-	-
Support Management Services	WR	NSWC/DD : Dahlgren, VA	2.293	0.125	Feb 2020	0.141	Nov 2020	0.365	Nov 2021	-		0.365	-	-	-
Support Management Services	C/CPFF	TMB-PSS : Washington, DC	0.351	0.043	Mar 2020	0.041	Nov 2020	0.076	Nov 2021	-		0.076	-	-	-
Support Management Services	C/CPFF	CACI-PSS : Washington, DC	0.872	0.053	Jul 2020	0.000		0.000		-		0.000	-	-	-
Support Management Services	C/CPFF	STRATEGIC INSIGHT : Arlington, VA	0.163	0.020	Jun 2020	0.022	Dec 2020	0.021	Dec 2021	-		0.021	-	-	-
Support Management Services	C/CPIF	UNC : Chapel Hill, NC	0.106	0.000		0.000		0.000		-		0.000	-	-	-
Support Management Services	WR	NSWC/CD : Carderock, MD	0.076	0.000		0.000		0.000		-		0.000	-	-	-
Support Management Services	C/CPIF	SPA : Washington, DC	0.559	0.073	Apr 2020	0.151	Nov 2020	1.248	Nov 2021	-		1.248	-	-	-
Need Item Text	C/BA	Not Specified : Not Specified	0.000	0.000		0.000		0.000		-		0.000	-	-	-
		Subtotal	10.184	0.318		0.400		1.802		-		1.802	-	-	N/A

	Prior Years	FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	571.418	35.694		61.656		96.556		-		96.556	-	-	N/A

Remarks

In FY20-22, Raytheon - EMD includes EASR EMD and EASR Engineering Services.

FY21 Product Development decreased from PB21 due to removing HP&S second source qualification effort. LM ADR and Backfit efforts were removed, and Raytheon I&PS BL10 integration efforts were increased

FY21 Support efforts decreased from PB21 primarily due to reducing ADR/Backfit efforts at multiple Field Activities. Funds were realigned to Raytheon I&PS BL10 Integration efforts

Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy		Date: May 2021
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*

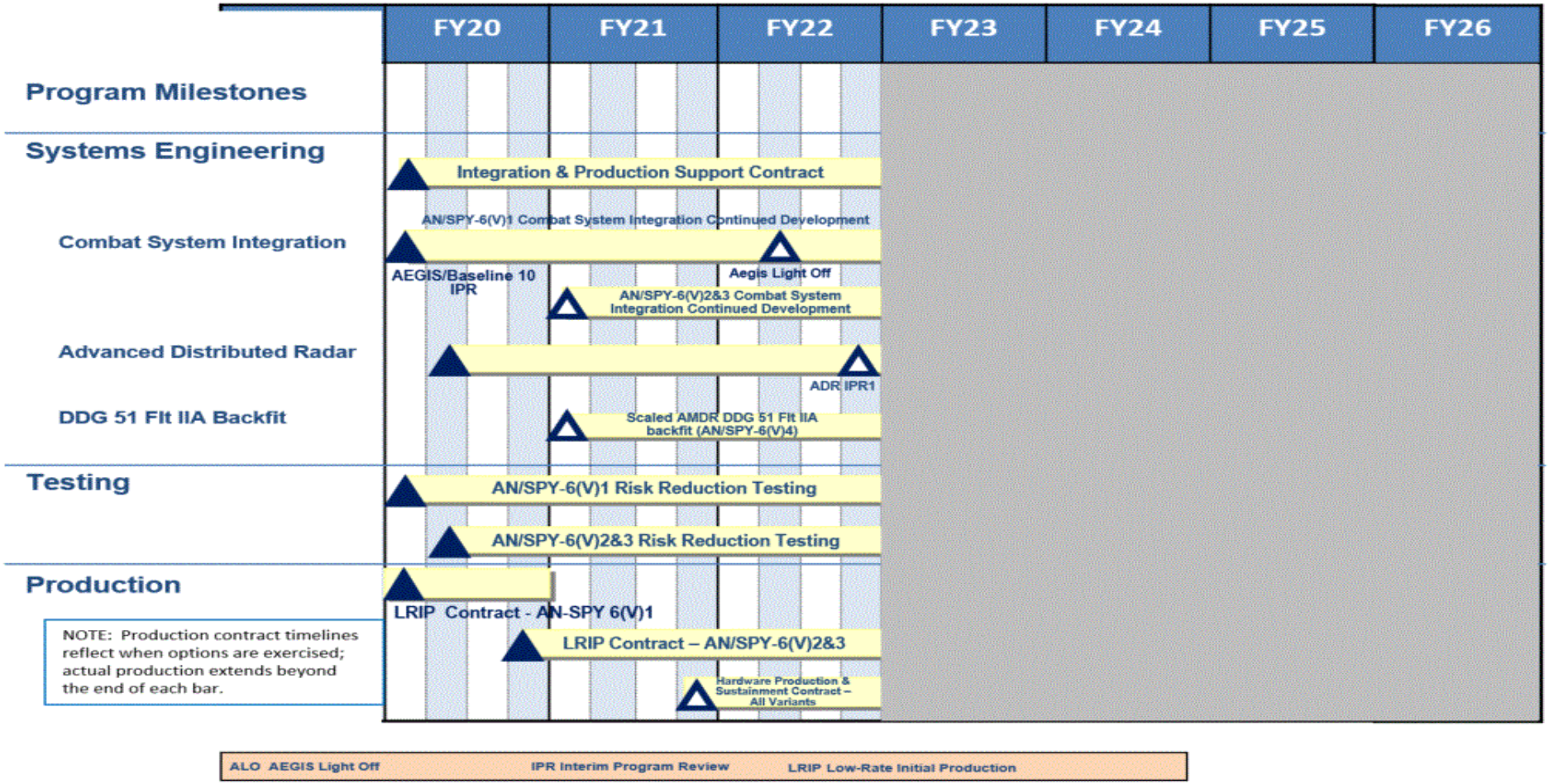

Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy		Date: May 2021
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604522N / *Air & Missile Defense Radar (AMDR) System*	**Project (Number/Name)** 3186 / *Air and Missile Defense Radar*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3186				
Integration and Production Support Contract	1	2020	4	2022
AEGIS Baseline 10 IPR	1	2020	1	2020
AN/SPY-6(V)1 Combat System Integration Continued Development	1	2020	4	2022
AN/SPY-6(V)1 Risk Reduction Testing	1	2020	4	2022
LRIP Contract - AN/SPY-6(V)1	1	2020	4	2020
Advanced Distributed Radar (ADR) Development and Integration	2	2020	4	2022
AN/SPY-6(V)2&3 Risk Reduction Testing	2	2020	4	2022
LRIP Contract - AN/SPY-6(V)2&3	4	2020	4	2022
AN/SPY-6(V) 2&3 Combat System Integration Continued Development	1	2021	4	2022
Scaled AMDR DDG51 FLT IIA Backfit (AN/SPY-6(V)4)	1	2021	4	2022
Hardware Production and Sustainment Contract	4	2021	4	2022
DDG125 Aegis Light off	2	2022	2	2022
ADR IPR 1	4	2022	4	2022