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

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</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	4,131.334	367.189	375.681	403.712	-	403.712	369.567	369.964	334.349	298.552	Continuing	Continuing
1447: <i>Surf Combatant Combat System Imp</i>	4,086.138	350.796	365.603	395.006	-	395.006	361.486	363.774	329.036	293.132	Continuing	Continuing
3357: <i>Aegis Training Improvement Program</i>	45.196	6.746	10.078	8.706	-	8.706	8.081	6.190	5.313	5.420	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	9.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.647

**Program MDAP/MAIS Code:**  
**Project MDAP/MAIS Code(s):** 180

**A. Mission Description and Budget Item Justification**

This project delivers Cruiser and Destroyer AEGIS Combat System (ACS) upgrades and integrates new capabilities to rapidly enhance the combat capabilities of the AEGIS Fleet in order to confront an increasing array of strategic, operational, and tactical challenges.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	379.116	415.625	361.917	-	361.917
Current President's Budget	367.189	375.681	403.712	-	403.712
Total Adjustments	-11.927	-39.944	41.795	-	41.795
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-39.944			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.500	0.000			
• SBIR/STTR Transfer	-11.427	0.000			
• Program Adjustments	0.000	0.000	40.508	-	40.508
• Rate/Misc Adjustments	0.000	0.000	1.287	-	1.287

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 9999: *Congressional Adds*

Congressional Add: *AEGIS Force-Level Interoperability Definintion and Analysis*

	FY 2019	FY 2020
	9.647	0.000
Congressional Add Subtotals for Project: 9999	9.647	0.000

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**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

	<b>FY 2019</b>	<b>FY 2020</b>
Congressional Add Totals for all Projects	9.647	0.000

**Change Summary Explanation**

FY19 decrease of 11.428M due to SBIR/STTR transfer and MISC adjustments.

FY20 decrease of 39.944 due to 39.944 Congressional directed reduction.

FY21 increase of \$41.795M due to addition of AEGIS Capability Package 23-1 to provide additional war fighting capabilities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>				<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
1447: <i>Surf Combatant Combat System Imp</i>	4,086.138	350.796	365.603	395.006	-	395.006	361.486	363.774	329.036	293.132	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
<b>Project MDAP/MAIS Code:</b> 180												

**A. Mission Description and Budget Item Justification**

AEGIS Baseline 9 capability packages 2020, 2021, and capability packages 22-1 and 23-1 will deliver additional warfighter improvements to the AEGIS Fleet to include improved Ballistic Missile Defense (BMD) capabilities (DDG only), SEWIP BLK II, MH-60R Integration, Total Ship Training Capability (TSTC), Condition Based Maintenance, Combat System Boundary Defense, NIFC-CA 2019, NIFC-CA Collateral III, High Energy Laser with Optical-Dazzler and Surveillance (HELIOS) integration, ESSM BLK 2 Optimized, MMSP Restoration, SM2-IIIC Functional Capability, AEGIS Linear Processor System (ALPS), Next Generation Surface Search Radar (NGSSR) integration. AEGIS BL 2020 will be delivered to 18 DDGs (51-53/57/61/65/69/79/80/83/113-120) and 10 CGs (59/60/62-66/68/69/71); and AEGIS BL 9 2021 will be delivered to 12 DDGs (81/84-88/92/94/121-124, 127).

AEGIS Baseline 10 capability package 2023 will provide critical warfighter improvements to the AEGIS FLT III Destroyers. AEGIS BL 10 2023 combat system development efforts include integration of the Air and Missile Defense Radar (AMDR) SPY-6 while building upon AEGIS BL 9 to form the foundation for the AEGIS Flight III DDG Combat System.

AEGIS Far Term Interoperability Improvement Plan (FTIIP) addressed interoperability issues within fielded AEGIS Combat System configurations.

AEGIS Task Force Cyber Awakening effort assesses and delivers design improvements to AEGIS Combat System Computer Program and Hardware configurations to counter emerging cyber threats. These improvements are implemented within AEGIS Combat Systems configurations currently under development and include updates to Boundary Defense Components (BDC).

AEGIS BL 5 capability package 2020 (AEGIS BL 5 2020) combines AEGIS BL 5 and BMD 4.1 into single AEGIS Computer Program enabling near simultaneous shift between AAW and BMD operations for the AEGIS Flight I/II DDGs as well as a combined Air and Ballistic Missile Defense capability. Additional capabilities delivered with AEGIS BL 5 2020 include SM-6 integration, as well as capabilities developed to address Fleet Urgent Operational Needs (UONs).

AEGIS BL 5 capability package 2023 (AEGIS BL 5 2023) includes refurbishment of the SPY-1D radar arrays with installation of Low Noise Amplifiers (LNA) to improve radar sensitivity against emerging threats through the end of the Flight I/II DDG service life.

AEGIS IFF MODE 4/5 Integration program addresses IFF Mode 4 issues and fully integrates Mode 5 IFF for all AEGIS Baselines by 2020 in support of Fleet direction.

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Combat Systems Test Bed (CSTB) will address the current limitations in AEGIS Modeling & Simulation highlighted by DOT&E in previous AEGIS baselines. Combat Systems Test Bed will provide automated analysis to efficiently process large amounts of M&S data. The CSTB has already been used to aid in the modeling and simulation of combat systems performance prior to the execution of every AEGIS Baseline 9 live fire testing since JAN 2015 and has a proven track record of realistic predictions and the identification of mission critical software defects. CSTB is already being utilized to predict AEGIS Baseline 9 2018 system performance on Cruisers and Destroyers, and has already run over 145,000 missile scenarios, with an associated cost avoidance of \$584M. The CSTB helps save on the use of targets and weapons required during live fire tests of new Combat Systems capabilities. DOT&E requires use of CSTB as noted in DOT&E letter dated Aug 09, 2013 and Jun 09, 2014. CSTB will continue to be used by IWS1 with expanded capabilities in 2018, 2019, and 2020, and by Commander Operational Test and Evaluation Force for AEGIS BL 9 Critical Operational Issue evaluations in 2022. The CSTB will be a critical system for Frigate Combat System and AEGIS BL 10 2023.

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

	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
<b>Title:</b> AEGIS DEVELOPMENT SUPPORT	25.459	36.832	55.364	0.000	55.364
<b>Articles:</b>	-	-	-	-	-
<p><b>Description:</b> AEGIS Development Support includes the following: AEGIS Technical Design Agent (TDA), AEGIS System Engineering, COTS Obsolescence evaluation, Future Surface Combatant (FSC) planning, AEGIS Development Site Operations and Maintenance, and Small Business Innovation Research (SBIR).</p> <p><b>FY 2020 Plans:</b> AEGIS TDA evaluation of Combat System configurations to assess overall performance and identify areas where modifications can be implemented to improve the performance of the AEGIS Combat System for all warfare areas.</p> <p>AEGIS System engineering evaluation of AEGIS Combat System performance and development of the AEGIS Capability Phasing Plan to ensure that warfighter improvements are implemented through future Combat System upgrades to meet emerging threats. These efforts are focused on defining future capability upgrades to the AEGIS Combat System.</p> <p>AEGIS COTS Obsolescence to include evaluation of systems currently delivered as well and those under development. These updates are focused on replacing high failure rate components in addition to monitoring and resolving obsolescence issues for all AEGIS hardware configurations.</p> <p>AEGIS Development Site Operation and Maintenance for the Land Based Test Sites (LBTS) ensures that adequate hours are available to support all planned AEGIS baseline development efforts. The LBTS include;</p>					

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>Combat System Engineering Development Site (CSEDS), Program Generation Center (PGC), SPY-1A Test Facility (STF), Naval Systems Computing Center (NSCC), and Surface Combat System Center (SCSC).</p> <p><b>FY 2021 Base Plans:</b> AEGIS System engineering evaluation of AEGIS Combat System performance and development of the AEGIS Capability Phasing Plan to ensure that warfighter improvements are implemented through future Combat System upgrades to meet emerging threats. These efforts are focused on defining future capability upgrades to the AEGIS Combat System.</p> <p>AEGIS COTS Obsolescence to include evaluation of systems currently delivered as well and those under development. These updates are focused on replacing high failure rate components in addition to monitoring and resolving obsolescence issues for all AEGIS hardware configurations.</p> <p>AEGIS Development Site Operation and Maintenance for the Land Based Test Sites (LBTS) ensures that adequate hours are available to support all planned AEGIS baseline development efforts. The LBTS include; Combat System Engineering Development Site (CSEDS), Program Generation Center (PGC), SPY-1A Test Facility (STF), Naval Systems Computing Center (NSCC), and Surface Combat System Center (SCSC).</p> <p>AEGIS Speed to Capability (ASToC) investments to evaluate and resolve urgent fleet requirements that can quickly be implemented and fielding using the AEGIS CSL.</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Increase due to AEGIS Speed To Capability (ASToC) development and integration was added under AEGIS Development for the FY21 Budget.</p>					
<p><b>Title:</b> AEGIS CRUISER BL 9 UPGRADES</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Develops and delivers AEGIS Cruiser baseline 9 upgrades. The Cruiser configuration of AEGIS BL 9 2020 captures additional warfighting improvements to include ESSM Blk 2 Functional, SEWIP - Early Hard Kill/ Soft Kill Coordination / Advanced Off-board Electronic Warfare communication, NIFC-CA Collateral III, NIFC-CA 2019, and National Technical Means integration with Agile Thunder.</p>	43.113	23.900	24.300	0.000	24.300
	-	-	-	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p><b>FY 2020 Plans:</b> AEGIS BL 9 2020 Certification.</p> <p>CG at sea event preparation, at sea event execution and post event support efforts required to field AEGIS BL 9 on CG 63, 64, 65, 69, and 71. Underway testing includes installation and checkout of computer program, Combat System Test events 1 and 2, Discrepancy investigation and resolution, Scenario development, CSSQT planning and post event analysis required to support FY21 CSSQT for CG 63, 64, 65, 69, and 71.</p> <p>Combat System Certification in 1st QTR to support fielding of the AEGIS Computer Program.</p> <p>Computer program emergent corrections as required to address software defects that impact planned underway test events or computer program certification.</p> <p>Computer Program updates required to address various hardware configurations.</p> <p><b>FY 2021 Base Plans:</b> FY21 CSSQT execution for CG 63, 64, 65, 69, and 71 and CG 63 and 64 DT/OT execution support and analysis. Computer program emergent corrections as required to address software defects that impact planned underway test events or computer program certification.</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 increase due to the certification of the cruiser configuration of BL 9 in FY20.</p>					
<p><b>Title:</b> AEGIS DESTROYER BL 9 UPGRADES</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> Develops and delivers AEGIS BL 9 Destroyer upgrades. AEGIS BL 9 2018 captured warfighting improvements to include; BMD 5.1, SEWIP Integration - EW aided kill evaluation, SPQ-9B AW Engage, UAV Improvements with Agile Sundowner, Raid Improvements with Agile Storm, track management updates, and Gun Weapon System splash avoidance. AEGIS BL 9 2020 includes BMD 5.1.1, BMD 5.1.2, ESSM Blk 2 Functional, SEWIP - Early Hard Kill/Soft Kill Coordination / Advanced Off-board Electronic Warfare</p>	31.500	30.214	24.800	0.000	24.800
	-	-	-	-	-

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>communication, NIFC-CA Collateral III, NIFC-CA 2019, and National Technical Means integration with Agile Thunder. AEGIS BL 9 2021 includes BMD 5.1.3, SEWIP - Auto Association, Advanced Training Domain, MH-60R Integration, IAMD Mission Planner, Above Water Sensor Coordinator, Advanced Calibration Experiment (ACE), Digital Air Control (DAC) Phase 1, Hypersonic tracking improvements with Agile Sirocco, and Electronic Warfare operator enhancements with Agile Moondog.</p> <p><b>FY 2020 Plans:</b>                      Phase 2 Certification Planning AUG-SEP 2020                      Execute Combat System Certification 1st QTR for DDG variants to support fielding of the AEGIS Computer Program.                      AEGIS BL 9 2018 9.2.0.2 Certification OCT 2019                      AEGIS BL 9 2020 Certification Planning MAR-APR 2020                      AEGIS BL 9 2020 Combat System Certification Panel MAY 2020                      AEGIS BL 9 2021 In-Progress Review #6 NOV 2019                      AEGIS BL 9 2021 Certification Planning AUG-SEP 2020</p> <p>Computer Program emergent corrections made as required to address software limitation impacting planned Underway Test events or Computer Program Certification.</p> <p>DDG At-Sea Event Preparation, At-Sea Test Event Execution and Post-Event Support efforts required to field AEGIS BL 9 2018 on DDG 119, AEGIS BL 9 2020 on DDG 79, and AEGIS BL 9 2021 on DDG 84 and 86. Underway testing include installation and checkout of Computer Program, Combat System Test events 1 and 2, Discrepancies investigation and resolution, Scenario development, CSSQT Planning and post event analysis required to support FY20 CSSQT on DDG 83, 84, 86, and 117. Includes Developmental Testing (DT) for the DDG configuration as part of the At-Sea events.</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness</p>					



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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p><b>Description:</b> AEGIS Capability Package 22-1 captures additional warfighting improvements to include BMD 5.1.4, Multi-Mission Signal Processor Restoration, SM2-IIIC Functional Capability, and integration of the AEGIS Linear Processor System (ALPS)</p> <p><b>FY 2020 Plans:</b>                      AEGIS CP 22-1 In-Progress Review #1 Q1 FY20                      AEGIS CP 22-1 In-Progress Review #2 Q4 FY20</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate remaining AEGIS CP 22-1 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support FY22 Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB).</p> <p>Develop and Integrate AEGIS code for the following capabilities: MMSP Restoration, SM2-IIIC Functional Capability, and AEGIS Linear Processor System (ALPS).</p> <p>The following efforts were descoped due to a FY20 Congressional mark; High Energy Laser with Optical-Dazzler and Surveillance (HELIOS) integration, ESSM BLK 2 Optimized, Next Generation Surface Search Radar (NGSSR) integration, Elevated Radar Advanced Calibration Experiment (ERACE), and Electronic Warfare operator enhancements with Agile Sundog, and Combat ID / Track Management improvements with Agile Silent Squall</p> <p><b>FY 2021 Base Plans:</b>                      AEGIS CP 22-1 In-Progress Review #3 Q2 FY21                      AEGIS CP 22-1 In-Progress Review #4 Q4 FY21</p>					

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>DDG at sea event preparation, at sea test event execution and post event support efforts executed to field AEGIS CP 22-1 on DDG 87 and 88 to include installation and checkout of computer program, Combat System Test events 1 and 2, discrepancy investigation and resolution, scenario development, CSSQT planning and post event analysis to support FY21 CSSQT on DDG 87 and DDG 88.</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate remaining AEGIS CP 22-1 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support FY22 Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB).</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Cost increase due to start of system test and integration efforts along with concurrent software development as well as DDG 87 and 88 CSSQT execution.</p>					
<p><b>Title:</b> AEGIS CAPABILITY BUILD 2023-1</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> AEGIS Capability Package 23-1 captures additional warfighting improvements to include SM-6 BLK 1B, SM-2 BLK IIIC Endurance Capability, NIFC Inc 3, SEWIP BLK 3 integration, Weapons Coordinator, Tomahawk Integration, Optimized ESSM BLK 2 Integration, Next Generation Surface Search Radar (NGSSR) integration, Elevated Radar Advanced Calibration Experiment (ERACE), Electronic Warfare operator enhancements with Agile Sundog, and Combat ID / Track Management improvements with Agile Silent Squall</p> <p><b>FY 2020 Plans:</b> None</p> <p><b>FY 2021 Base Plans:</b></p>	0.000	0.000	40.709	0.000	40.709
	-	-	-	-	-

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<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>AEGIS CP 23-1 In-Progress Review #1 Q2 FY21 AEGIS CP 23-1 In-Progress Review #2 Q4 FY21</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate remaining AEGIS CP 23-1 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support FY23 Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB).</p> <p>Develop and Integrate AEGIS code for the following capabilities: SM-6 BLK 1B, SM-2 BLK IIIC Endurance Capability, NIFC Inc 3, SEWIP BLK 3 integration, Weapons Coordinator, Tomahawk Integration, Optimized ESSM BLK 2 Integration, Next Generation Surface Search Radar (NGSSR) integration, Elevated Radar Advanced Calibration Experiment (ERACE), Electronic Warfare operator enhancements with Agile Sundog, and Combat ID / Track Management improvements with Agile Silent Squall</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Increase is due to addition of AEGIS development effort to deliver the following new warfighting capabilities as part of AEGIS CP 23-1; SM-6 BLK 1B, SM-2 BLK IIIC Endurance Capability, NIFC Inc 3, SEWIP BLK 3 integration, Weapons Coordinator, and Tomahawk Integration, Optimized ESSM BLK 2 Integration, Next Generation Surface Search Radar (NGSSR) integration, Elevated Radar Advanced Calibration Experiment (ERACE), Electronic Warfare operator enhancements with Agile Sundog, and Combat ID / Track Management improvements with Agile Silent Squall</p>					
<p><b>Title:</b> AEGIS FLT III DESTROYER BL 10 UPGRADES (PREVIOUSLY ADVANCED CAPABILITY BUILD 20 / TECHNOLOGY INSERTION 16/20)</p> <p align="right"><b>Articles:</b></p>	157.978	168.717	129.402	0.000	129.402
	-	-	-	-	-

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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><b>Description:</b> Develops and delivers AEGIS BL 10 FLT III Destroyer upgrades. AEGIS BL 10 2023 includes the following warfighting improvements; SPY-6 (AMDR), BMD 6.0, Close in Weapons System (CIWS) point defense sensor integration, TDL J3.4 Message, and MK 160 Gun Computing System (GCS) improvements.</p> <p><b>FY 2020 Plans:</b> AEGIS BL 10 2023 In-Progress Review #4 Q1 FY20 AEGIS BL 10 2023 In-Progress Review #5 Q4 FY20</p> <p>Continued AEGIS Code Development and Integration of the following capabilities: SPY-6 (AMDR), BMD 6.0, MK 160 GCS improvements, TDL J3.4 message updates, and CIWS sensor data integration.</p> <p>Continued Site Activation efforts required to support AEGIS BL 10 2023 Development and Integration Testing. SPY-6 Radar Integration within the AEGIS Combat System. Provides funding to complete SPY-6 development and resolve integration discrepancies discovered during the testing process.</p> <p>Evaluate and map all Flight III DDG requirements to support future integration and delivery to the first Flight III DDG.</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate AEGIS BL 10 2023 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB). Early Test and Evaluation efforts being conducted at Land Based Test Sites to validate Computer Program development and integration efforts as required to meet the delivery to the first Flight III DDG.</p> <p>Test and Evaluation efforts being conducted at Land Based Test Sites to validate Computer Program development and integration efforts as required to meet the delivery to the first Flight III DDG.</p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>Integrating Modeling and Simulation products to improve requirements test coverage and reduce future test requirements.</p> <p><b>FY 2021 Base Plans:</b> AEGIS BL 10 2023 In-Progress Review #6 Q3 FY21</p> <p>Continued AEGIS Code Development and Integration of the following capabilities: SPY-6 (AMDR), BMD 6.0, MK 160 GCS improvements, TDL J3.4 message updates, and CIWS sensor data integration.</p> <p>Continued Site Activation efforts required to support AEGIS BL 10 2023 Development and Integration Testing. SPY-6 Radar Integration within the AEGIS Combat System. Provides funding to complete SPY-6 development and resolve integration discrepancies discovered during the testing process.</p> <p>Evaluate and map all Flight III DDG requirements to support future integration and delivery to DDG 125. Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate AEGIS BL 10 2023 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB). Early Test and Evaluation efforts being conducted at Land Based Test Sites to validate Computer Program development and integration efforts as required to meet the delivery to the first Flight III DDG.</p> <p>Test and Evaluation efforts being conducted at Land Based Test Sites to validate Computer Program development and integration efforts as required to meet the delivery to DDG-125.</p> <p>Integrating Modeling and Simulation products to improve requirements test coverage and reduce future test requirements.</p> <p><b>FY 2021 OCO Plans:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
N/A					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Decrease is due to completion of planned capability integration software builds 4-6 in FY20.					
<b>Title:</b> AEGIS DESTROYER BL 5 UPGRADES	41.400	46.905	29.173	0.000	29.173
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> AEGIS BL 5 2020 combines AEGIS BL 5 and BMD 4.1 into single AEGIS Computer Program enabling near simultaneous shift between AAW and BMD operations for the AEGIS Flight I/II DDGs as well as a combined Air and Ballistic Missile Defense capability. Additional capabilities delivered with AEGIS BL 5 2020 include SM-6 integration, as well as capabilities developed to address Fleet Urgent Operational Needs (UONs). This includes Digital Air Control Updates, Raid Improvements with Agile Storm and Prism, Expanded National Technical Means Function (NTF) with Thunder, and Low Slow Flyer improvements with Sundowner, Maintenance Updates, and Interop Improvements. AEGIS BL 5 2023 includes refurbishment of the SPY-1D radar arrays with installation of Low Noise Amplifiers (LNA) to improve radar sensitivity against emerging threats through the end of the Flight I/II DDG service life. Additional capabilities delivered with AEGIS BL 2023 includes BMD 4.2 operations, and Computer Program maintenance.					
<b>FY 2020 Plans:</b> AEGIS BL 5 2020 At-Sea Event FY20 Q2 AEGIS BL 5 2020 Certification Planning MAR-APR 2020 AEGIS BL 5 2020 Combat System Certification Panel MAY 2020 AEGIS BL 5 2023 System Requirements Review FY20 Q1 AEGIS BL 5 2023 Preliminary Design Review FY20 Q3 AEGIS BL 5 2023 Critical Design Review FY20 Q3					
DDG At-Sea Event Preparation, At-Sea Test Event Execution and Post-Event Support efforts required to field AEGIS BL 5 2020 on DDG 58. Underway testing include installation and checkout of Computer Program, Combat System Test events 1 and 2, Discrepancies investigation and resolution, Scenario development, Developmental Test (DT) Planning and post event analysis required to support FY20 DT event on DDG 58.					
Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test & Evaluation (T&E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>remaining AEGIS BL 5 2023 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support FY23 Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB).</p> <p>Continued LNA Firmware Development to support AEGIS BL 5 2023 and Wallops Island Virginia site modifications in preparation for the installation of the LNA array to support future test and evaluation efforts.</p> <p>AEGIS BL 5 2023 code development, integration, and testing.</p> <p>.</p> <p><b>FY 2021 Base Plans:</b> AEGIS BL 5 2023 Land Based Test Site Upgrade FY21 Q1 Continued AEGIS BL 5 2023 code development, integration, and testing.</p> <p>Programmatic and technical leadership in a collaborative Navy and industry environment. Program Management Team (PMT), System Engineering Cross Product Team (SECPT), Element, Safety, Configuration Management (CM), Test &amp; Evaluation (T&amp;E), Certification, and Subject Matter Experts (SMEs). Participate in and evaluate remaining AEGIS BL 5 2023 design decisions, Engineering Technical Reviews (ETR), Specification Change, Review, Implementation, and baseline governance boards and Navy Review Team (NRT). Execute Test Execution activities and stimulation capability. Execute Combat System certification activities required to support FY23 Certification. Execute risk management. Develop briefs for technical and programmatic meetings in support of Mission Readiness Assessments (MRAs), In Process Reviews (IPRs), Program Reviews, and Test Readiness Reviews (TRRs). Execute Combat System Safety Program to include Weapon System Explosive Safety Review Board (WSESRB).</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy			<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
FY21 Decrease is due to completion of BL 5 2020 development, testing, and certification in FY20.					
<b>Title:</b> AEGIS: FIX IFF MODE 4 / ACCELERATE MODE 5	28.691	21.470	8.854	0.000	8.854
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> This program addresses an immediate operational issue to fix Identification Friend or Foe (IFF) mode 4 as well as accelerate integration of IFF mode 5 and bring all AEGIS Cruisers and Destroyers into IFF mode 5 compliance by 2020 in accordance with the JROC mandate to sunset IFF mode 4.					
<b>FY 2020 Plans:</b> AEGIS BL 5 2020 At-Sea Event FY20 Q2 AEGIS BL 5 2020 Certification Planning MAR-APR 2020 AEGIS BL 5 2020 Combat System Certification Panel MAY 2020 AEGIS BL 9 2020 Certification Planning MAR-APR 2020 AEGIS BL 9 2020 CSCP MAY 2020					
<b>FY 2021 Base Plans:</b> Complete all Ship board deliveries planned in FY21. Support Computer Program update if required based on Discrepancies identified within the fielded configurations that impact new capabilities provided to address IFF issues.					
<b>FY 2021 OCO Plans:</b> N/A					
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Decrease due to completion of development, testing, and certification of AEGIS Baseline 9 2020 and Baseline 5 2020 in FY20. FY21 focus shifts to fielding the software updates to ships and development of maintenance updates as required to address any identified issues.					
<b>Title:</b> COMBAT SYSTEMS TEST BED (CSTB)	7.855	15.710	18.484	0.000	18.484
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> Combat Systems Test Bed (CSTB) is an AEGIS Modeling and Simulation (M&S) tool built to address limitations in AEGIS Developmental Test (DT) and Operational Test (OT) that DOT&E highlighted in previous AEGIS baselines. CSTB models AEGIS Combat System (ACS) performance against adversary threats through the use of high fidelity M&S, generating Objective Quality Evidence (OQE) that directly supports DOT&E evaluations of new AEGIS baselines. CSTB reduces Navy OT costs by enabling portions of AEGIS operational					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>testing to be conducted via M&amp;S - increasing requirements coverage and avoiding the costs of targets and weapons that would ordinarily be required to conduct OT solely via live fire events. In letters dated August 9, 2013 and June 9, 2014, DOT&amp;E has established the requirement that Navy use tactical code-based M&amp;S (CSTB) in conjunction with live tests for AEGIS OT. IWS1 and Commander Operational Test and Evaluation Force will continue to use CSTB for AEGIS Baseline 9 and Baseline 10 Critical Operational Issue evaluations in 2022 and beyond.</p> <p>CSTB has also been used extensively to develop pre-flight performance predictions and post-flight performance reconstructions for every AEGIS Baseline 9 live fire test since January 2015. During this time, CSTB has established a track record of accurate predictions over 145,000 missile scenarios - identifying mission-critical software defects that led directly to \$584M in cost avoidance and precluded numerous flight test failures.</p> <p>In addition to its support for AEGIS BL9/10 OT and flight test predictions, CSTB is also critical to Frigate (FFG(X)) Combat System development. CSTB Builds 1&amp;2 have been completed thus far, and there are six (6) more builds planned to provide additional functionality in support of BL9, BL10, and FFG(X) Combat System OT requirements.</p> <p><b>FY 2020 Plans:</b>                      Commence development of Build 3                      In-Progress Review #6 JAN 2020                      Verification, Validation &amp; Accreditation data review build 3 JUN 2020                      In-Progress Review #7 JUL 2020                      BL 9 2020 DT Runs for Record (RFR) JUN-AUG 2020                      Government oversight of Combat System Test Bed development and support for the Verification, Validation, &amp; Accreditation process.                      Development and integration of CSTB Build 3, expanding on capabilities delivered in CSTB Build 2, to include the following efforts:                      Initial AEGIS Weapon System (AWS) BL10 testing                      Integration of AN/SPY-6, SM-6 Block 1A, AAW Debris, and SLQ-32V(6) models.                      Verification and validation (V&amp;V) of AEGIS Weapon System (AWS - AN/SPY-1, Weapon Control System (WCS), Command &amp; Decision (C&amp;D)), ESSM Block 1, and SM-2 Block IIIA/IIIB model capabilities</p>					



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<p>Integration efforts related to fielding Cyber capabilities within the AEGIS Common Source Library (CSL).</p> <p>System engineering efforts to identify, evaluate, and develop potential solutions required to address Cyber deficiencies within the AEGIS Combat System</p> <p><b>FY 2021 Base Plans:</b> In-Progress Review #8 FEB 2020 In-Progress Review #9 AUG 2020</p> <p>Integration efforts related to fielding Cyber capabilities within the AEGIS Common Source Library (CSL).</p> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Increase to support development of the following new AEGIS BL 10 2023 cyber capabilities; boundary proxy service, cyber tool updates, mutual authentication, network asset manager, common GUI, sandbox, data validation, secure startup, access control list, host IDS, data in transit, and host firewall.</p>					
<p><b>Title:</b> FAR TERM INTEROPERABILITY IMPROVEMENT PLAN (FTIIP)</p> <p align="right"><b>Articles:</b></p> <p><b>Description:</b> FTIIP included development of Link 16 Digital Air Control (DAC) phase 1 capability to integrate with the next generation fighter (F-35). DAC is the only means available for the F-35 to inject sensor data into the Carrier Strike Group (CSG) common tactical picture in an adverse communications denied environment. DAC phase 1 is a distributed lethality enabler.</p> <p><b>FY 2020 Plans:</b> None</p> <p><b>FY 2021 Base Plans:</b> N/A</p> <p><b>FY 2021 OCO Plans:</b> N/A</p>	4.300	0.000	0.000	0.000	0.000
	-	-	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	350.796	365.603	395.006	0.000	395.006

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

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• R&D 0604501N: <i>Multi Mission Signal Processor</i>	2.503	2.567	2.856	-	2.856	0.000	0.000	0.000	0.000	Continuing	Continuing
• SCN 2122: <i>DDG 51</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
• OPN 0900: <i>DDG Modernization</i>	452.908	564.966	547.569	-	547.569	813.820	956.877	1,015.245	1,127.859	2,303.514	11,065.952
• R&D 0604378N PU 3159: <i>NIFC-CA</i>	29.092	25.767	25.694	-	25.694	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPN 5231: <i>Ship Missile Support Equipment (AEGIS Support Equipment)</i>	29.092	25.767	25.694	-	25.694	0.000	0.000	0.000	0.000	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

Combat system improvements are implemented in baselines as described in the project mission statement. After the combat system is completed and tested, the computer program and associated equipment are delivered to the new construction shipbuilders and modernization shipyards where the computer program and equipment are installed and tested along with all other elements of the shipboard combat system and associated combat support systems. The computer program is a Government Furnished Computer Program (GFCP) deliverable to the Production Test Center for equipment test and check out. Future Combat System deliveries will be provided using the Combat System Engineering Agent (CSEA) contract. Additional modifications to the existing contracts will address any war fighting improvements as directed by OPNAV.

Currently PEO IWS 1.0 has existing contracts or pending contract actions support all efforts defined within the Budget Exhibit. A summary of contracts and contractual actions are captured below.

Active Major Contracts:

- N00024-13-C-5116: Competitive award to support AEGIS BL 9 2018 and follow on efforts - Period of Performance FY13-FY23
- N00024-16-C-5102: Sole source follow on to complete AEGIS BL 9 2018 for DDG 118-119 - Period of Performance FY16-FY21
- N00024-13-C-5103: Sole source follow on to support NJ Sites - Period of Performance FY18-FY23
- N00024-17-C-5109: Life cycle logistics support - Period of Performance FY17-FY21
- N00024-14-C-5104: Sole source to support ship installation and test - Period of Performance FY14-FY22
- N00024-15-C-5151: AEGIS ship integration and test - Period of Performance FY15-FY25

Pending New Contracts:

- N00024-19-R-2126: Surface Combatant Software Factory - Planned Award Date NOV 2020
- N00024-20-R-5102: Surface Combatant System Engineering and Software Integration - Planned Award Date JUN 2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

In addition, PEO IWS 1.0 leverages contracts of other organizations to support AEGIS Development. These include:  
MDA - LM BMD Contract (AEGIS BL 5 2020/2023 DEV)  
NAVSEA - JHU APL, SAIC, CACI, SI, TMB, and Engility (ENG/PSS/ESS)  
SEA05C - IDT (DEV)

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

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Systems Engineering	C/CPIF	Lockheed Martin : Moorestown, NJ	2,911.750	258.354	Oct 2018	257.621	Oct 2019	271.298	Oct 2020	-		271.298	Continuing	Continuing	Continuing
Systems Engineering	SS/CPFF	APL : Baltimore, MD	118.742	21.482	Oct 2018	21.334	Oct 2019	18.524	Oct 2020	-		18.524	Continuing	Continuing	Continuing
Systems Engineering	WR	NSWC : Dahlgren, VA	511.355	30.578	Oct 2018	39.571	Oct 2019	42.557	Oct 2020	-		42.557	Continuing	Continuing	Continuing
Systems Engineering	SS/CPAF	BAE Systems : Rockville, MD	67.453	5.521	Oct 2018	5.521	Oct 2019	7.587	Oct 2020	-		7.587	Continuing	Continuing	Continuing
Systems Engineering	C/CPIF	Raytheon : St. Petersburg, FL	0.000	1.400	Oct 2018	3.512	Oct 2019	8.630	Oct 2020	-		8.630	0.000	13.542	-
Systems Engineering	WR	NSWC : Port Hueneme, CA	94.375	5.578	Oct 2018	6.895	Oct 2019	5.368	Oct 2020	-		5.368	Continuing	Continuing	Continuing
Systems Engineering	WR	NWAS : Corona, CA	41.904	4.082	Oct 2018	4.152	Oct 2019	3.587	Oct 2020	-		3.587	Continuing	Continuing	Continuing
Systems Engineering	WR	SPAWAR : San Diego, CA	13.756	1.089	Oct 2018	1.098	Oct 2019	1.897	Oct 2020	-		1.897	Continuing	Continuing	Continuing
Systems Engineering	WR	Various : Various	190.998	13.524	Oct 2018	16.204	Oct 2019	25.587	Oct 2020	-		25.587	Continuing	Continuing	Continuing
Award fees	WR	Various : Various	10.091	0.386	Oct 2018	0.458	Oct 2019	0.000	Oct 2020	-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPIF	Technology Service Corporation : Silver Spring , MD	0.000	0.432	Oct 2018	0.463	Oct 2019	0.852	Oct 2020	-		0.852	0.000	1.747	-
<b>Subtotal</b>			3,960.424	342.426		356.829		385.887		-		385.887	Continuing	Continuing	N/A

**Remarks**  
 Various Performing Activities consist of multiple performing activities with funding for each no greater than \$1 million per year. These larger performing activities include CDSA Dam Neck and NSWC/Crane.

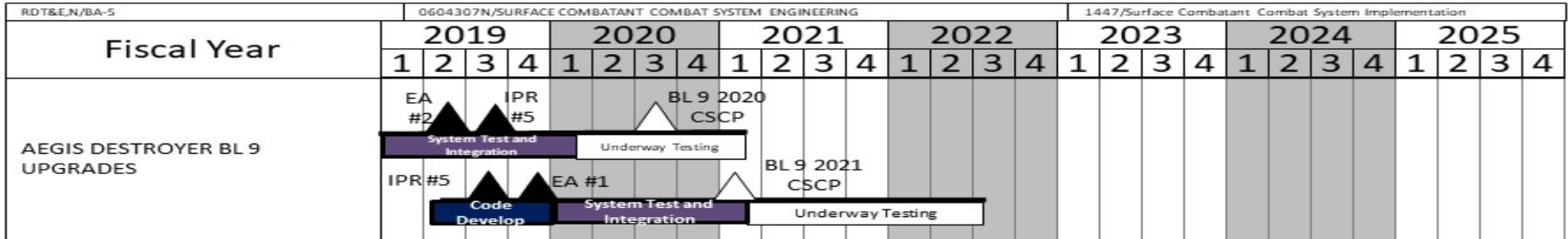
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2019</b>		<b>FY 2020</b>		<b>FY 2021 Base</b>		<b>FY 2021 OCO</b>		<b>FY 2021 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Test and Evaluation	WR	Department of Interior : Boise, Idaho	44.759	1.058	Oct 2018	1.124	Oct 2019	1.201	Oct 2020	-		1.201	Continuing	Continuing	Continuing





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Fiscal Year	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING																1447/Surface Combatant Combat System Implementation												
	2019				2020				2021				2022				2023				2024				2025				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
CAPABILITY PACKAGE 2022					IPR #1	IPR #2	IPR #3	IPR #4					BL 9 2022 CSCP																
					Code Develop				System Test and Integration				Underway Testing																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Fiscal Year	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING																1447/Surface Combatant Combat System Implementation															
	2019				2020				2021				2022				2023				2024				2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
CAPBILITY PACKAGE 2023																																

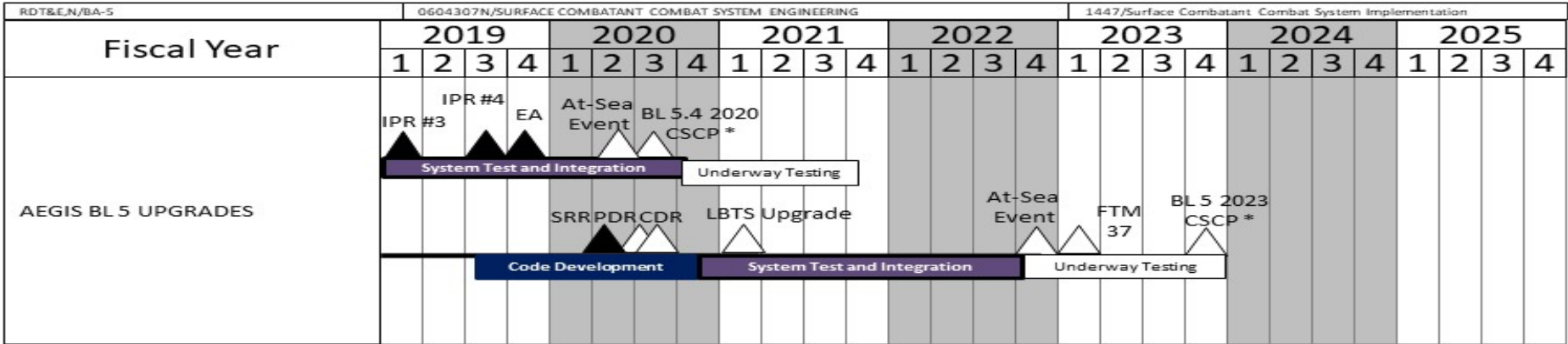
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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Fiscal Year	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING																1447/Surface Combatant Combat System Implementation																			
	2019				2020				2021				2022				2023				2024				2025											
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4								
ACB 20/TI 12 (NC)		IPR #3			IPR #4				IPR #5				IPR #6				BL 10 2023 EA *				BL 10 2023 ALO*				BL 10 2023 CSCP *											
	Code Development				System Test and Integration								Underway Testing																							

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Fiscal Year	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING																1447/Surface Combatant Combat System Implementation											
	2019				2020				2021				2022				2023				2024				2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AEGIS; FIX M4 / ACCELERATE M5	IPR #1		BMD 3.6																									
AEGIS BL 5 2020		5.3.13 CSCP		CSCP		BMD 4.1																						
	Code		System Test and Integration				Underway Testing																					
AEGIS BL 7 2019						BL 7 2019																						
	System Test and Integration		Underway Testing																									
AEGIS BL 9 2020		EA #2		IPR #5																								
	System Test and Integration		Underway Testing																									

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

RDT&E,N/BA-5	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING												1447/Surface Combatant Combat System Implementation																			
Fiscal Year	2019				2020				2021				2022				2023				2024				2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Combat System Test Bed		▲ #1			▲ #2		▲ ACRED		▲ #3				▲ #4		▲ ACRED		▲ #5				▲ #6		▲ ACRED									

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

RDT&E,N/BA-5	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING												1447/Surface Combatant Combat System Implementation																			
Fiscal Year	2019				2020				2021				2022				2023				2024				2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
AEGIS CYBER AWAKENING TASK FORCE <small>(Notional)</small>	IPR #6		IPR #7		IPR #8		IPR #9		IPR #10		IPR #11		IPR #12		IPR #13		IPR #14		IPR #15													

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Fiscal Year	0604307N/SURFACE COMBATANT COMBAT SYSTEM ENGINEERING																1447/Surface Combatant Combat System Implementation															
	2019				2020				2021				2022				2023				2024				2025							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
AEGIS FARTERM INTEROP IMPROVEMENT PLAN (Notional)			IPR #3																													

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 1447</b>				
AEGIS CRUISER BL 9 UPGRADES: ENGINEERING ASSESSMENT #2	2	2019	2	2019
AEGIS CRUISER BL 9 UPGRADES: BL 9 2020 IN-PROGRESS REVIEW #5	3	2019	3	2019
AEGIS CRUISER BL 9 UPGRADES: COMPUTER PROGRAM CERTIFICATION PANEL BL 9 2020	3	2020	3	2020
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2020 ENGINEERING ASSESSMENT (EA) #2	2	2019	2	2019
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2020 IN-PROGRESS REVIEW (IPR) #5	3	2019	3	2019
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2020 COMBAT SYSTEM CERTIFICATION PANEL	3	2020	3	2020
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2021 IN-PROGRESS REVIEW (IPR) #5	3	2019	3	2019
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2021 ENGINEERING ASSESSMENT (EA) #1	4	2019	4	2019
AEGIS DESTROYER BL 9 UPGRADES: BL 9 2021 COMBAT SYSTEM CERTIFICATION PANEL	1	2021	1	2021
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2022: CP 2022 IN-PROGRESS REVIEW (IPR) #1	2	2020	2	2020
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2022: CP 2022 IN-PROGRESS REVIEW (IPR) #2	4	2020	4	2020
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2022: CP 2022 IN-PROGRESS REVIEW (IPR) #3	2	2021	2	2021
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2022: CP 2022 IN-PROGRESS REVIEW (IPR) #4	4	2021	4	2021
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2022: CP 2022 COMBAT SYSTEM CERTIFICATION PANEL	2	2022	2	2022

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2021 Navy **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2023: CP 2023 IN-PROGRESS REVIEW (IPR) #1	2	2021	2	2021
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2023: CP 2023 IN-PROGRESS REVIEW (IPR) #2	4	2021	4	2021
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2023: CP 2023 IN-PROGRESS REVIEW (IPR) #3	2	2022	2	2022
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2023: CP 2023 IN-PROGRESS REVIEW (IPR) #4	4	2022	4	2022
AEGIS DESTROYER BL 9 UPGRADES: CAPABILITY PACKAGE 2023: CP 2023 COMBAT SYSTEM CERTIFICATION PANEL	3	2023	3	2023
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 IN-PROGRESS REVIEW (IPR) #3	2	2019	2	2019
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 IN-PROGRESS REVIEW (IPR) #4	1	2020	1	2020
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 IN-PROGRESS REVIEW (IPR) #5	4	2020	4	2020
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 IN-PROGRESS REVIEW (IPR) #6	3	2021	3	2021
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 ENGINEERING ASSESSMENT (EA)	1	2022	1	2022
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 AEGIS LIGHT OFF (ALO)	2	2022	2	2022
AEGIS FLT III DESTROYER BL 10 UPGRADES: BL 10 2023 COMBAT SYSTEM CERTIFICATION PANEL (CSCP)	4	2023	4	2023
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2020 IN-PROGRESS REVIEW (IPR) #3	1	2019	1	2019
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2020 IN-PROGRESS REVIEW (IPR) #4	3	2019	3	2019

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**Exhibit R-4A, RDT&E Schedule Details: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2020 ENGINEERING ASSESSMENT (EA)	4	2019	4	2019
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2020 AT-SEA EVENT	2	2020	2	2020
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2020 COMBAT SYSTEM CERTIFICATION PANEL (CSCP)	3	2020	3	2020
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 SYSTEM REQUIREMENTS REVIEW (SRR)	2	2020	2	2020
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 PRELIMINARY DESIGN REVIEW (PDR)	3	2020	3	2020
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 CRITICAL DESIGN REVIEW (CDR)	3	2020	3	2020
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 LBTS UPGRADE	1	2021	1	2021
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 AT-SEA EVENT	4	2022	4	2022
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 FTM 37	1	2023	1	2023
AEGIS DESTROYER BL 5 UPGRADES: AEGIS BL 5 2023 COMBAT SYSTEM CERTIFICATION PANEL (CSCP)	4	2023	4	2023
AEGIS IFF MODE 4/5 Integration: AEGIS BL 5 2020 IN-PROGRESS REVIEW (IPR) #1	1	2019	1	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 5 2019 (BL 5.3.13) COMBAT SYSTEM CERTIFICATION PANEL	3	2019	3	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 5 2019 (BMD 3.6) COMBAT SYSTEM CERTIFICATION PANEL	4	2019	4	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 5 2019 (BMD 4.0) COMBAT SYSTEM CERTIFICATION PANEL	4	2019	4	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 5 2020 COMBAT SYSTEM CERTIFICATION PANEL	3	2020	3	2020
AEGIS IFF MODE 4/5 Integration: AEGIS BL 7 2019 COMBAT SYSTEM CERTIFICATION PANEL	4	2019	4	2019

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2021 Navy **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>
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Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
AEGIS IFF MODE 4/5 Integration: AEGIS BL 9 2020 ENGINEERING ASSESSMENT (EA) #2	2	2019	2	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 9 2020 IN-PROGRESS REVIEW (IPR) #5	3	2019	3	2019
AEGIS IFF MODE 4/5 Integration: AEGIS BL 9 2020 COMBAT SYSTEM CERTIFICATION PANEL	3	2020	3	2020
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #1	2	2019	2	2019
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #2	2	2020	2	2020
COMBAT SYSTEM TEST BED (CTSB): CTSB BL 9.2.2 ACRED	2	2020	2	2020
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #3	2	2021	2	2021
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #4	2	2022	2	2022
COMBAT SYSTEM TEST BED (CTSB): CTSB BL 9.2 OT ACRED	3	2022	3	2022
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #5	2	2023	2	2023
COMBAT SYSTEM TEST BED (CTSB): CTSB BUILD #6	2	2024	2	2024
COMBAT SYSTEM TEST BED (CTSB): CTSB BL 10.0 OT ACRED	3	2024	3	2024
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #6	2	2019	2	2019
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #7	4	2019	4	2019
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #8	2	2020	2	2020
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #9	4	2020	4	2020
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #10	2	2021	2	2021
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #11	4	2021	4	2021
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #12	2	2022	2	2022
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #13	4	2022	4	2022
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #14	2	2023	2	2023
TASK FORCE CYBER AWAKENING (TFCA): TFCA IN-PROGRESS REVIEW #15	4	2023	4	2023

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 1447 / <i>Surf Combatant Combat System Imp</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
FAR TERM INTEROPERABILITY IMPROVEMENTS PLAN: FTIIP IN-PROGRESS REVIEW #3	4	2019	4	2019

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy										<b>Date:</b> February 2020		
<b>Appropriation/Budget Activity</b> 1319 / 5					<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>				<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3357: <i>Aegis Training Improvement Program</i>	45.196	6.746	10.078	8.706	-	8.706	8.081	6.190	5.313	5.420	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The AEGIS Training Improvement project provides enhancements and upgrades to the Total Ship Training Capability (TSTC) training components within the combat system to address needs for increased training capability and functionality in conjunction with AEGIS Advanced Capability Builds (ACB). These enhancements will address current and future training requirements by implementing new functionality to enable the individual warfighter through distributed battle group events to engage in more complex training requirements to support fleet required training certification events. Capability Development and integration are related to Integrated Air and Missile Defense, Underwater, Surface, and other warfare areas. Capability enhancements and upgrades include development of re-useable common components that can be leveraged by SSDS MK2 combat systems, and/or integration of re-usable common components developed by the TSTC Battle Force Tactical Trainer (BFTT) Program and Ship Self Defense System (SSDS) MK2 TSTC Training Improvement programs to meet AEGIS combat system training requirements. TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F Fleet Synthetic Trainers (FSTs). TSTC continues to integrate and update, as new tactical capabilities are being introduced, to enable crew operator proficiency training for basic and sustainment level training events, through distributed strike group certification fleet synthetic training (FST) events and including COMPTUEX FST at Sea integration into Live, Virtual and Constructive (LVC) environment. Continued Development is required to integrate new capabilities and interfaces to provide training for AEGIS and SSDS combat system capability upgrades, and to address the Fleet's Live, Virtual and Constructive (LVC) Fleet Training Wholeness initiative. Additionally, modernization is needed to support the DoD Training Transformation Plan, the Chief of Naval Operations Fleet Response Plan and Commander United States Fleet Forces Command Fleet Readiness Training Plan.

The Advanced Training Domain (ATD) is being developed to combine BFTT and the AEGIS Combat Training System (ACTS) into a common system that integrates with AEGIS BL 9.2.2AF, and SSDS BL 11.xAF. ATD is being hosted along with the AEGIS and SSDS combat system on TI-16 common processing and display hardware. ATD is being designed to be the core of the Total Ship Training Capability, and is projected to be more reliable, simpler to use, and architected to be extensible to meet interoperability and capability enhancement challenges in the future.

The BFTT is being updated to maintain integration and capability enhancements developed for the Cooperative Engagement Capability (CEC), Surface Electronic Warfare Improvement Program (SEWIP), and the Carrier Tactical Support Center (CV-TSC), and SSDS Fire Control Loop Improvement Program.

TSTC provides realistic joint warfare training across the spectrum of armed conflict, realistic unit level team training in all warfare areas (e.g. NIFC-CA and BMD missions to support IAMD). TSTC provides ships' Commanding Officers and Battle Group/Battle Force Commanders with the ability to conduct coordinated realistic, high stress, combat system level team training as an integral part of the Afloat Training Organization, the Tactical Training Groups and C2F/C3F FST/LVC events.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>

Develop and integrate MH-60R simulator to enable embedded shipboard training in support of basic and sustainment training, as well as establishes the pathway to support pier-side Fleet Synthetic Training (FST) events.

Develop and Integrate Cooperative Engagement Capability (CEC) Enhanced Training (CET) to support basic and sustainment level training, as well as provide ability to distribute and establish CEC data link during pier-side fleet synthetic training exercises. CET will also provide enable proficiency training of NIFC-CA capability.

Develop and integrate CEC Interim Training (CIT) capability to support pier-side fleet synthetic training events. This is an interim capability support the distributed portion of the CET capability, until CET is fully deployed. This supports training of strike groups of new tactical capabilities that were integrated into the AEGIS BL9 ships, and provides the necessary functionality to allow ships to train as a strike group.

Develop and integrate upgrades to Battle-Force Electronic Warfare Trainer (BEWT) to support soft kill training with NULKA.

Develop Identification Friend or Foe (IFF) simulator to enable training of Modes 1, 2, 3A, 4, C, 5 and S on both AEGIS and SSDS ships. Capability will support AEGIS and SSDS IFF MODE 4/5 Integration program will address training Mode 4 Inoculation, and allow training of Modes 5 and S IFF.

Develop and integrate commensurate training improvements to SSDS ACB 20 for Enhanced Sea Sparrow Missile (ESSM) and Electronic Warfare (EW) tactical improvements.

Integrate Navy Continuous Training Environment (NCTE) networking and cyber security upgrades maintain authorization to participate in distributed shipboard training events.

TSTC integrated on AEGIS provides the capability to complete system and operational level testing of the combat system.

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

	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<b>Title:</b> AEGIS Training Improvement and ACB 16 Integration	5.444	7.770	6.868	0.000	6.868
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> AEGIS Total Ship Training Capability (TSTC) provides enhancements to training components and increase training functionality in conjunction with AEGIS ACB16 development and integration. These enhancements will address current and future training requirements and implement new functionality to support more complex training requirements related to Underwater, Surface and other warfighter upgrades.					
<b>FY 2020 Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
<ul style="list-style-type: none"> <li>- Continue development, integration and testing of ATD on Aegis BL 10 2023and Ship Self Defense System (SSDS) BL 11.</li> <li>- Develop changes to BFTT to incorporate ATD Human Machine Interface (HMI) to modernize BFTT on ships without TI 16 computing and display infrastructure.</li> </ul> <p><b>FY 2021 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue development, integration and testing of ATD on Aegis BL 10 2023and Ship Self Defense System (SSDS) BL 11.</li> <li>- Develop changes to BFTT to incorporate ATD Human Machine Interface (HMI) to modernize BFTT on ships without TI 16 computing and display infrastructure.</li> </ul> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Decrease based on reduce testing requirements planned in FY21.</p>					
<p><b>Title:</b> Fleet Training Wholeness</p> <p align="right"><b>Articles:</b></p>	1.302	2.308	1.838	0.000	1.838
<p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue integration and testing of sim over live training improvements being developed with radars.</li> <li>- Continue development of Advanced Training Domain (ATD) for Aegis BL 9 2021 and BL 10 2023.</li> </ul> <p><b>FY 2021 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue integration and testing of sim over live training improvements being developed with radars.</li> <li>- Continue development of Advanced Training Domain (ATD) for Aegis BL 9 2022 and BL 10 2023.</li> </ul> <p><b>FY 2021 OCO Plans:</b> N/A</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> FY21 Decrease based on reduce scope associated with AEGIS Integration events.</p>	-	-	-	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	6.746	10.078	8.706	0.000	8.706

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE/0204571N/1427: <i>Surface Tactical Team Trainer (STTT)</i>	40.505	67.790	51.597	-	51.597	37.228	19.313	16.242	16.571	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

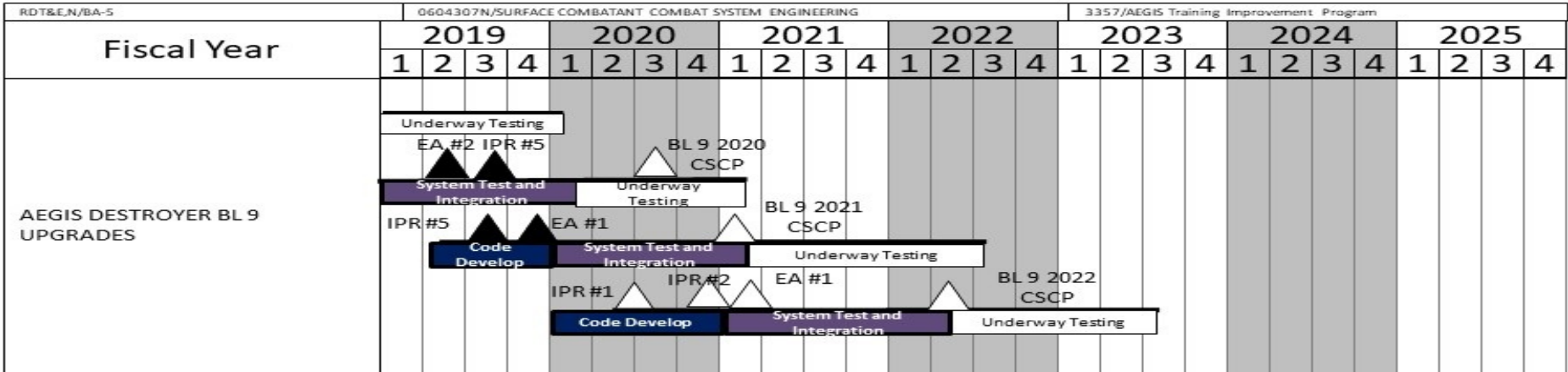
Efforts will be completed on various contracts to support requirements updates to multiple products that will support Training Integration and Implementation within AEGIS ACB16.

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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 0604307N / Surface Combatant Cmbt Sys Eng					3357 / Aegis Training Improvement Program							
<b>Product Development (\$ in Millions)</b>				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	
Product Development	Various	Various : Various	23.060	3.496	Dec 2018	6.822	Dec 2019	5.607	Dec 2020	-		5.607	Continuing	Continuing	Continuing	
<b>Subtotal</b>			23.060	3.496		6.822		5.607		-		5.607	Continuing	Continuing	N/A	
<b>Support (\$ in Millions)</b>				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	
System Engineering	Various	Various : Various	19.411	2.592	Dec 2018	2.578	Dec 2019	2.350	Dec 2020	-		2.350	Continuing	Continuing	Continuing	
<b>Subtotal</b>			19.411	2.592		2.578		2.350		-		2.350	Continuing	Continuing	N/A	
<b>Management Services (\$ in Millions)</b>				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 Support	C/CPIF	CACI : Arlington, VA	2.093	0.553	Dec 2018	0.570	Dec 2019	0.624	Dec 2020	-		0.624	Continuing	Continuing	Continuing	
Professional Support	C/CPIF	TMB : Washington DC	0.632	0.105	Dec 2018	0.108	Dec 2019	0.125	Dec 2020	-		0.125	Continuing	Continuing	Continuing	
<b>Subtotal</b>			2.725	0.658		0.678		0.749		-		0.749	Continuing	Continuing	N/A	
<b>Project Cost Totals</b>			45.196	6.746		10.078		8.706		-		8.706	Continuing	Continuing	N/A	
<b>Remarks</b>																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2021 Navy</b>		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 3357 / <i>Aegis Training Improvement Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3357</b>				
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2020 ENGINEERING ASSESSMENT #2	2	2019	2	2019
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2020 IN-PROGRESS REVIEW (IPR) #5	3	2019	3	2019
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2020 COMBAT SYSTEM CERTIFICATION PANEL (TI12H)	3	2020	3	2020
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2021 IN-PROGRESS REVIEW (IPR) #1	3	2019	3	2019
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2021 ENGINEERING ASSESSMENT #1	4	2019	4	2019
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2021 COMBAT SYSTEM CERTIFICATION PANEL (TI16)	1	2021	1	2021
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2022 IN-PROGRESS REVIEW (IPR) #1	2	2020	2	2020
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2022 IN-PROGRESS REVIEW (IPR) #2	4	2020	4	2020
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2022 ENGINEERING ASSESSMENT #1	1	2021	1	2021
AEGIS DESTROYER UPGRADES: AEGIS DESTROYER BL 9 UPGRADES: 2022 COMBAT SYSTEM CERTIFICATION PANEL (TI16)	2	2022	2	2022

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

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</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
9999: <i>Congressional Adds</i>	0.000	9.647	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.647
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

Provide System Engineering to evaluate Force Level Interoperability Improvements.

**B. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2019	FY 2020
<b>Congressional Add:</b> AEGIS Force-Level Interoperability Definintion and Analysis	9.647	0.000
<b>FY 2019 Accomplishments:</b> Review and Evaluate potential solution to improve Combat System interoperability with in the AEGIS Platform and associated battlegroup configurations.		
<b>FY 2020 Plans:</b> N/A		
<b>Congressional Adds Subtotals</b>	9.647	0.000

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE/0604307N/1447: AEGIS COMBAPTANT COMBAT SYSTEM DEVELOPMENT AND INTEGRATION	362.170	405.547	353.019	-	353.019	317.337	282.960	282.776	0.000	Continuing	Continuing

**Remarks**

**D. Acquisition Strategy**

N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2021 Navy** **Date:** February 2020

<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
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Proj 9999	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024							
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q				
Force Interoperability							▲	▲																								

2020PB - 0604307N - 9999

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Navy		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604307N / <i>Surface Combatant Cmbt Sys Eng</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 9999</b>				
Force Interoperability: Contract Kickoff	3	2019	3	2019
Force Interoperability: In Progress Review	4	2019	4	2019