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| Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy | | | | | | | | | | | Date: March 2019 | |
| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy I BA 4: Advanced Component Development & Prototypes (ACD&P)</i> | | | | | R-1 Program Element (Number/Name) PE 0603599N I (U) <i>Frigate Development</i> | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | Cost To Complete | Total Cost |
| Total Program Element | 84.594 | 137.655 | 132.775 | 59.007 | - | 59.007 | 85.341 | 75.386 | 70.707 | 72.108 | Continuing | Continuing |
| 3086: <i>Frigate</i> | 84.594 | 137.655 | 132.775 | 59.007 | - | 59.007 | 85.341 | 75.386 | 70.707 | 72.108 | Continuing | Continuing |
| Program MDAP/MAIS Code: | | | | | | | | | | | | |
| Project MDAP/MAIS Code(s): 374 | | | | | | | | | | | | |
| <u>A. Mission Description and Budget Item Justification</u> | | | | | | | | | | | | |
| The FY 2020 funding request was reduced by \$15.000 million to account for the availability of prior year execution balances. | | | | | | | | | | | | |
| <p>In FY 2014, the Navy established the requirements for a lethal and survivable small surface combatant ship (later redesignated as Frigate (FF)), above that of Littoral Combat Ship (LCS) to meet future missions. Based upon the Navy's 2016 Force Structure Assessment resulting in validation of the need for 52 small surface combatants and the need to address increasingly complex threats in the global maritime environment, the Navy reassessed the capabilities required to ensure the Frigate paces future threats. With Guided Missile Frigate (FFG(X)), the Navy desires to maximize the small surface combatant capabilities in the Anti-Surface Warfare (SUW), Anti-Submarine Warfare (ASW), Electromagnetic Maneuver Warfare (EMW), and Air Warfare (AW) mission areas, while keeping the ship affordable and as a part of a "high-low" mix of surface ships. The updated assessment was completed to support establishment of top-level FFG(X) requirements in Summer 2017 and resulted in a Navy-approved Capability Development Document (CDD). The CDD entered JROC Staffing in August 2018 and is scheduled for JROC-Validation in 2nd QTR 2019.</p> <p>The FFG(X) program will continue to refine the cost estimates to support a FY 2020 Detail Design and Construction (DD&C) contract award. Based on the updated FFG(X) requirements, FY 2017 focused on efforts for the system specification (SPEC) development and on conceptual design contract development. FY 2018 focused on refining the system SPEC and the program awarded conceptual design contracts to multiple vendors. Funds were also used to continue maturing the FFG(X) Government Furnished Equipment (GFE) baseline; continue Frigate Weapon System (FWS)(formally CMS) design development, coding, and test; acquisition documentation development; C4I systems development; and continued system engineering efforts to ensure mature Government Furnished Information (GFI) deliveries. Conceptual Design contracts complete in 4th QTR FY2019. FY 2020 marks the shift to SCN with the completion of the conceptual design phase. Efforts in systems engineering, cost estimating, and ship design management began in RDTE Project 3086, but are reflected in SCN Line Item 2128 after award of the DD&C contract (4th QTR 2020). Remaining FY 2020 funds will be focused on the continuation of DD&C source selection, Frigate Weapon System (FWS) design development, coding, and test; acquisition documentation approval for MS B; Combat System and C4I Element Integration; and test and evaluation activities. Combat System efforts decrease in FY 2023, as testing activities are ramping up resulting in a relatively stable profile in the outyears.</p> | | | | | | | | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy | | | | Date: March 2019 | |
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| Appropriation/Budget Activity | | R-1 Program Element (Number/Name) | | | |
| 1319: Research, Development, Test & Evaluation, Navy I BA 4: Advanced Component Development & Prototypes (ACD&P) | | PE 0603599N I (U)Frigate Development | | | |
| B. Program Change Summary (\$ in Millions) | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total |
| Previous President's Budget | 143.450 | 134.772 | 75.353 | - | 75.353 |
| Current President's Budget | 137.655 | 132.775 | 59.007 | - | 59.007 |
| Total Adjustments | -5.795 | -1.997 | -16.346 | - | -16.346 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | -1.997 | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -3.476 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | -15.481 | - | -15.481 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | -0.865 | - | -0.865 |
| • Congressional Directed Reductions Adjustments | -2.319 | - | - | - | - |
| Change Summary Explanation | | | | | |
| FY 2018: | | | | | |
| -\$2.319M Congressional reduction for program management excess growth | | | | | |
| -\$3.476M SBIR | | | | | |
| FY 2019: | | | | | |
| -\$1.997M - Congressional reduction for testing and engineering delays | | | | | |
| FY 2020: | | | | | |
| -\$15.000M - reduction due to availability of prior year balances | | | | | |
| -\$0.481 - Contractor Services Reform reduction | | | | | |
| -\$0.856M - Navy Working Capital Fund and various rate adjustments | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy | | | | | | | | | | Date: March 2019 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | | | Project (Number/Name) 3086 / Frigate | | | |
| COST (\$ in Millions) | Prior Years | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | Cost To Complete | Total Cost |
| 3086: Frigate | 84.594 | 137.655 | 132.775 | 59.007 | - | 59.007 | 85.341 | 75.386 | 70.707 | 72.108 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |
| Project MDAP/MAIS Code: 374 | | | | | | | | | | | | |
| A. Mission Description and Budget Item Justification | | | | | | | | | | | | |
| Frigate (FFG(X)) efforts are composed of the design and development for a more lethal and survivable multi-mission warship focused on anti-surface warfare and anti-submarine warfare capabilities (SUW/ASW), local air defense and enhanced survivability features. FFG(X) design modifications for added capability over LCS include an over-the-horizon (OTH) surface-to-surface missile system, upgraded air defense weapons and sensors, advanced electronic warfare system and improved decoys, local air defense, and enhanced survivability features. This effort will encompass design, development, and technical issue resolution to support design maturity for DD&C FY 2020 contract award. Certification and testing efforts are also required to support the FFG(X) delivery, operations, and introduction to the fleet. | | | | | | | | | | | | |
| The FFG(X) design and development phases include platform design, development and risk reduction; combat system element integration; total ship system engineering and integration; combat systems and warfare systems certification; and planning and conduct of system testing. These efforts include procurement of combat and warfare system elements and/or simulators to support production representative testing in support of design, development, and certification efforts and ordnance in support of testing. Additional capabilities over the LCS will include an Over-the-Horizon (OTH) surface-to-surface missile system, upgraded air defense weapons and sensors, advanced electronic warfare system and improved decoys, local air defense, and enhanced survivability features. | | | | | | | | | | | | |
| This funding will also include efforts and activities required for formal Developmental and Operational testing of the FFG(X). Test and Evaluation (T&E) will concentrate on verifying integration and interoperability of employed technologies and systems in the FFG(X) design to achieve the mission capabilities and performance requirements as defined in the FFG(X) Capability Development Document (CDD). T&E functions will include the evaluation of Critical Technical Parameters (CTP), Measures of Effectiveness (MOE), Measures of Suitability (MOS), and Key Performance Parameters (KPP). | | | | | | | | | | | | |
| Since the FY19 President's Budget submission, additional testing activities have been identified to support Milestone B products, system specification approval and cybersecurity increasing the Test & Evaluation requirements for the program. Funding planned is for the execution of DT and C4I integration & test, cyber test and certification, warfare system integration & test and certification, aviation (manned and unmanned) integration & test and certification in FY 2019. | | | | | | | | | | | | |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | | | | | | | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total | |
| Title: Ship Systems / C4I / Warfare Systems Engineering | | | | | | | 131.653 | 124.458 | 50.179 | 0.000 | 50.179 | |
| Articles: | | | | | | | - | - | - | - | - | |
| Description: The Frigate (FFG(X)) is a multi-mission ship that focuses on Anti-Surface Warfare (SUW), Anti-Submarine Warfare (ASW) capabilities and local air defense. Specific capabilities include Over-the-Horizon | | | | | | | | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy | | | Date: March 2019 | | | |
| Appropriation/Budget Activity 1319 / 4 | | R-1 Program Element (Number/Name) PE 0603599N I (U)Frigate Development | Project (Number/Name) 3086 I Frigate | | | |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total |
| <p>(OTH), upgraded Air Defense weapons and sensors, advanced electronic warfare system and improved decoys, variable depth sonar, towed array, torpedo defense, and enhanced survivability features.</p> <p>FY 2019 Plans: Ship Systems Engineering Continue system engineering efforts related to naval architecture, machinery engineering and topside design analysis. Emphasis will be placed on the structural and stability disciplines, and incorporation of lethality and survivability enhancements to include the flow-down impacts to the supporting machinery and electrical systems. Completion of the Final System SPEC to support DD&C Request for Proposal (RFP) release. Completion of contractor-led conceptual designs to support FY 2020 competition. Continue development of the documentation to support Milestone B in FY 2020. Continue efforts to support and verify updated cost estimates that will feed the Independent Cost Estimate (ICE)/ Component Cost Position (CCP). Complete Gate 4 and 5 reviews to support the final release of DD&C RFP in 4th QTR.</p> <p>C4I / Warfare Systems Engineering Continue system engineering efforts related to C4I and warfare systems specifications. Continue OTH systems engineering and testing efforts for integration of OTH missile. Continue FWS development efforts to ensure full ship integration aligns with total ship design efforts and integrate additional FFG(X) required capabilities. Execute CS Software In Process Reviews (IPRs). Integrate other CS and C4I elements into total ship design. Implement additional cyber security/information assurance (IA) measures on the warfare system and C4I suite to pace the current and future threats. Continue development of the Milestone B documentation. Continue efforts to support and verify cost estimates that will feed the Independent Cost Estimate (ICE)/ Component Cost Position (CCP).</p> <p>FY 2020 Base Plans: Ship Systems Engineering Continue system engineering efforts related to naval architecture, machinery engineering and topside design analysis. Emphasis will be placed on the structural and stability disciplines, and incorporation of lethality and survivability enhancements to include the flow-down impacts to the supporting machinery and electrical systems. Continue development of the documentation to support Milestone B in FY 2020. Complete MS B for 2nd QTR approval. Participate in source selection for DD&C Award, including technical and cost evaluation.</p> <p>C4I / Warfare Systems Engineering</p> | | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy | | | | Date: March 2019 | | |
| Appropriation/Budget Activity 1319 / 4 | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | Project (Number/Name) 3086 / Frigate | | |
| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total |
| Continue system engineering efforts related to C4I and warfare systems specifications. Continue OTH systems engineering and testing efforts for integration of OTH missile. Continue FWS development efforts to ensure full ship integration aligns with total ship design efforts and integrate additional FFG(X) required capabilities. Continue integration of other CS and C4I elements into total ship design. Implement additional cyber security/ information assurance (IA) measures on the warfare system and C4I suite to pace the current and future threats. Continue development of the Milestone B documentation for approval in 2nd QTR. Participate in Source Selection for DD&C Award, including technical and cost evaluation. FY 2020 OCO Plans: N/A FY 2019 to FY 2020 Increase/Decrease Statement: Decrease in funds from FY 2019 to FY 2020 is due to the ending of the conceptual design phase and award of the Detail Design and Construction (DD&C) contract under SCN (Line Item 2128) in FY 2020. | | | | | | |
| Title: Test & Evaluation Articles: Description: Conduct FFG(X) test planning in support of Developmental Testing and Operational Testing (DT/ OT), including Live Fire Test and Evaluation (LFT&E), and procurement of T&E Ordnance. Plan for and execute DT and C4I integration & test, cyber test and certification, warfare system integration & test and certification, aviation (manned and unmanned) integration & test and certification. Late FY17 efforts were shifted to the FFG(X) test planning leveraging the FF test planning efforts. FY 2019 Plans: Continue FFG(X) Test and Evaluation Master Plan (TEMP) updates and continue WIPTs required to achieve TEMP approval. Support future updates required for land-based SIM/STIM test requirements for the integration and test of the FFG(X) platform. Begin execution of land-based SIM/STIM modeling and test efforts. Acquire LFT&E Waiver Approval to support MS B. Complete collaborative development of LFT&E Management Plan by working with DOT&E. Acquire LFT&E Waiver Approval to support MS B. Plan and Execute Cyber Table Top (CTT)-2. Continue to refine shipyard stage testing events in specification and contracting documentation. Identify and align resources for cybersecurity testing. Continue strategy coordination and oversight approvals for the overarching cybersecurity testing and certification approach. FY 2020 Base Plans: Complete collaborative development of FFG(X) TEMP and obtain approvals from stakeholder organizations. Continue planning for Cybersecurity Table Top (CTT)-2. Participate in Source Selection for DD&C Award. | | 6.002 - | 8.317 - | 8.828 - | 0.000 - | 8.828 - |

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| Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy | | | | Date: March 2019 | |
| Appropriation/Budget Activity 1319 / 4 | | R-1 Program Element (Number/Name) PE 0603599N / (U) <i>Frigate Development</i> | | Project (Number/Name) 3086 / <i>Frigate</i> | |

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| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total |
| <p>Develop DT and OT scenarios and detailed test planning. Continue execution of LFT&E; SIM/STIM modeling; Verification, Validation and Accreditation (VV&A) and test efforts. Continue alignment for cybersecurity testing.</p> <p><i>FY 2020 OCO Plans:</i> N/A</p> <p><i>FY 2019 to FY 2020 Increase/Decrease Statement:</i> No significant change from FY 2019 to FY 2020. Funding planned is for the execution of DT and C4I integration & test, cyber test and certification, warfare system integration & test and certification, aviation (manned and unmanned) integration & test and certification.</p> | | | | | |
| Accomplishments/Planned Programs Subtotals | 137.655 | 132.775 | 59.007 | 0.000 | 59.007 |

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| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| <u>Line Item</u> | <u>FY 2018</u> | <u>FY 2019</u> | <u>FY 2020 Base</u> | <u>FY 2020 OCO</u> | <u>FY 2020 Total</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • SCN/2128: <i>FFG-Frigate</i> | 0.000 | 0.000 | 1,281.177 | - | 1,281.177 | 2,057.027 | 1,750.434 | 1,792.095 | 1,827.937 | 11,761.465 | 20,470.135 |
| Remarks Beginning in FY20, SCN Line Item 2128 captures FFG(X) procurement. | | | | | | | | | | | |
| D. Acquisition Strategy The FFG(X) acquisition strategy was signed in 1st QTR FY 2019 to support a full and open competitive contract award in FY 2020. | | | | | | | | | | | |
| E. Performance Metrics T&E functions will include the evaluation of Critical Technical Parameters (CTP), Measures of Effectiveness (MOE), Measures of Suitability (MOS), and Key Performance Parameters (KPP). | | | | | | | | | | | |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | | | | | | | | Date: March 2019 | | | |
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| Appropriation/Budget Activity 1319 / 4 | | | | | | R-1 Program Element (Number/Name) PE 0603599N I (U)Frigate Development | | | | Project (Number/Name) 3086 I Frigate | | | | | |
| Product Development (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Conceptual Design Contracts | C/FFP | Various : Various | 6.000 | 68.000 | Feb 2018 | 38.247 | Feb 2019 | 0.000 | | - | | 0.000 | 0.000 | 112.247 | - |
| System SPEC Development | WR | Government Activities : Various | 5.580 | 1.500 | Jan 2018 | 1.375 | Jan 2019 | 0.000 | | - | | 0.000 | 0.000 | 8.455 | - |
| System SPEC Development | C/CPAF | Various Contractors : Various | 2.500 | 2.500 | Jan 2018 | 1.225 | Jan 2019 | 0.000 | | - | | 0.000 | 0.000 | 6.225 | - |
| Over the Horizon (OTH) Missile Integration | WR | NAWC, China Lake : China Lake, CA | 0.652 | 0.558 | Feb 2018 | 0.645 | Feb 2019 | 0.020 | Feb 2020 | - | | 0.020 | Continuing | Continuing | Continuing |
| Over the Horizon (OTH) Missile Integration | WR | Various : Various | 1.413 | 1.236 | Feb 2018 | 0.656 | Feb 2019 | 0.020 | Feb 2020 | - | | 0.020 | Continuing | Continuing | Continuing |
| FFG Architecture Framework/ Cyber | C/CPAF | Engility : San Diego, CA | 0.412 | 2.202 | Jan 2018 | 3.615 | Jan 2019 | 3.184 | Jan 2020 | - | | 3.184 | Continuing | Continuing | Continuing |
| C4I Development | WR | SPAWAR : Charleston, SC | 3.516 | 1.364 | Nov 2017 | 1.831 | Nov 2018 | 1.100 | Nov 2019 | - | | 1.100 | Continuing | Continuing | Continuing |
| C4I Development | WR | SPAWAR : San Diego, CA | 1.907 | 1.390 | Nov 2017 | 1.686 | Nov 2018 | 1.516 | Nov 2019 | - | | 1.516 | Continuing | Continuing | Continuing |
| Frigate Weapons System Development (FWS) | C/CPIF | Lockheed Martin : Various | 15.752 | 13.980 | Jan 2018 | 13.442 | Jan 2019 | 13.822 | Jan 2020 | - | | 13.822 | Continuing | Continuing | Continuing |
| Frigate Weapons System Development (FWS) | Various | Various Contractors : Various | 0.500 | 1.823 | Nov 2017 | 1.889 | Nov 2018 | 1.400 | Nov 2019 | - | | 1.400 | 0.000 | 5.612 | - |
| Frigate Weapons System Development (FWS) | WR | Government Activities : Various | 2.123 | 1.165 | Nov 2017 | 2.114 | Nov 2018 | 3.530 | Nov 2019 | - | | 3.530 | Continuing | Continuing | Continuing |
| Warfare Systems Development | WR | NUWC, Newport : Newport, RI | 1.500 | 1.410 | Nov 2017 | 1.740 | Nov 2018 | 0.554 | Nov 2019 | - | | 0.554 | Continuing | Continuing | Continuing |
| Warfare Systems Development | WR | NSWC, DD : Dahlgren, VA | 4.989 | 1.550 | Nov 2017 | 1.307 | Nov 2018 | 0.900 | Nov 2019 | - | | 0.900 | Continuing | Continuing | Continuing |
| Warfare Systems Development | WR | NSWC, CD : Carderock, MD | 0.445 | 0.571 | Nov 2017 | 0.555 | Nov 2018 | 0.554 | Nov 2019 | - | | 0.554 | Continuing | Continuing | Continuing |
| Warfare Systems Development | C/CPIF | Lockheed Martin : Various | 1.852 | 0.660 | Dec 2017 | 5.197 | Dec 2018 | 0.500 | Dec 2019 | - | | 0.500 | Continuing | Continuing | Continuing |
| Warfare Systems Development | Various | Various : Various | 4.092 | 4.316 | Nov 2017 | 6.145 | Nov 2018 | 2.200 | Nov 2019 | - | | 2.200 | Continuing | Continuing | Continuing |
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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | | | | | | | | Date: March 2019 | | | |
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| Appropriation/Budget Activity 1319 / 4 | | | | | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | | | Project (Number/Name) 3086 / Frigate | | | | | |
| Product Development (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Warfare Systems Development | WR | Government Activities : Various | 1.438 | 2.667 | Nov 2017 | 2.245 | Nov 2018 | 1.811 | Nov 2019 | - | | 1.811 | 0.000 | 8.161 | - |
| Aviation Integration Development | WR | NAWC, AD : Patuxent River, MD | 1.396 | 1.302 | Nov 2017 | 2.273 | Dec 2018 | 1.150 | Dec 2019 | - | | 1.150 | Continuing | Continuing | Continuing |
| Aviation Integration Development | WR | NSWC, DD : Dahlgren, VA | 0.116 | 0.441 | Dec 2017 | 0.686 | Nov 2018 | 0.587 | Nov 2019 | - | | 0.587 | Continuing | Continuing | Continuing |
| Subtotal | | | 56.183 | 108.635 | | 86.873 | | 32.848 | | - | | 32.848 | Continuing | Continuing | N/A |
| Remarks Beginning in FY 2020, most efforts are realigned to SCN Line Item 2128 after ship contract award. | | | | | | | | | | | | | | | |
| Support (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Government Engineering Support | WR | NSWC, CD : Carderock, MD | 5.044 | 2.505 | Nov 2017 | 10.024 | Nov 2018 | 3.262 | Nov 2019 | - | | 3.262 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | NSWC, PD : Philadelphia, PA | 2.676 | 1.718 | Nov 2017 | 1.849 | Nov 2018 | 1.880 | Nov 2019 | - | | 1.880 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | NSWC, DD : Dahlgren, VA | 2.842 | 3.428 | Nov 2017 | 3.704 | Nov 2018 | 1.500 | Nov 2019 | - | | 1.500 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | NSWC, PHD : Port Hueneme, CA | 0.677 | 0.355 | Nov 2017 | 0.348 | Nov 2018 | 0.270 | Nov 2019 | - | | 0.270 | Continuing | Continuing | Continuing |
| Government Engineering Support | WR | Government Activities : Various | 0.316 | 2.285 | Nov 2017 | 1.356 | Nov 2018 | 1.220 | Nov 2019 | - | | 1.220 | Continuing | Continuing | Continuing |
| Contractor Engineering Support | C/CPAF | Booz Allen Hamilton : McLean, VA | 1.056 | 0.550 | Feb 2018 | 0.764 | Feb 2019 | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| Contractor Engineering Support | C/CPAF | Gryphon : Arlington, VA | 0.000 | 1.175 | Nov 2017 | 1.688 | Nov 2018 | 1.161 | Nov 2019 | - | | 1.161 | Continuing | Continuing | Continuing |
| Contractor Engineering Support | C/CPIF | Alion : Arlington, VA | 2.042 | 1.434 | Feb 2018 | 5.515 | Feb 2019 | 2.670 | Feb 2020 | - | | 2.670 | Continuing | Continuing | Continuing |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | | | | | | | | Date: March 2019 | | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | | | Project (Number/Name) 3086 / Frigate | | | | | |
| Support (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Contractor Engineering Support | Various | Various : Various | 1.960 | 1.252 | Jan 2018 | 1.867 | Jan 2019 | 0.400 | Jan 2020 | - | | 0.400 | Continuing | Continuing | Continuing |
| Subtotal | | | 16.613 | 14.702 | | 27.115 | | 12.363 | | - | | 12.363 | Continuing | Continuing | N/A |
| Remarks Beginning in FY 2020, a portion of the Support costs are realigned to SCN Line Item 2128. | | | | | | | | | | | | | | | |
| Test and Evaluation (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Model Development | WR | NSWC, CD : Carderock, MD | 2.413 | 3.880 | Nov 2017 | 3.805 | Dec 2018 | 3.880 | Dec 2019 | - | | 3.880 | 0.000 | 13.978 | - |
| Test and Evaluation Master Plan (TEMP) Development | C/CPIF | Alion : Arlington, VA | 0.550 | 0.809 | Dec 2017 | 0.552 | Dec 2018 | 0.020 | Dec 2019 | - | | 0.020 | Continuing | Continuing | Continuing |
| Test and Evaluation Master Plan (TEMP) Development | WR | Government Activities : Various | 0.000 | 0.841 | Dec 2017 | 0.754 | Dec 2018 | 0.210 | Dec 2019 | - | | 0.210 | Continuing | Continuing | Continuing |
| Test and Evaluation Mast Plan (TEMP) Support | C/CPAF | Engility : San Diego | 0.000 | 0.300 | Dec 2017 | 0.954 | Dec 2018 | 0.210 | Dec 2019 | - | | 0.210 | Continuing | Continuing | Continuing |
| Land Based Integration & Test | WR | Government Activities : Various | 0.000 | 0.172 | Dec 2017 | 2.252 | Nov 2018 | 4.508 | Nov 2019 | - | | 4.508 | Continuing | Continuing | Continuing |
| Subtotal | | | 2.963 | 6.002 | | 8.317 | | 8.828 | | - | | 8.828 | Continuing | Continuing | N/A |
| Management Services (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Program Management Support | C/CPIF | Alion : Arlington, VA | 2.159 | 1.421 | Dec 2017 | 2.742 | Dec 2018 | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| Program Management Support | WR | Various : Various | 6.676 | 6.895 | Dec 2017 | 7.728 | Dec 2018 | 4.968 | Dec 2019 | - | | 4.968 | Continuing | Continuing | Continuing |

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|---|--|--|--|--|--|--|--|--|--|--|--|-------------------------|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy | | | | | | | | | | | | Date: March 2019 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | | | Project (Number/Name) 3086 / Frigate | | | | |

| Management Services (\$ in Millions) | | | | FY 2018 | | FY 2019 | | FY 2020 Base | | FY 2020 OCO | | FY 2020 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 |
| Subtotal | | | 8.835 | 8.316 | | 10.470 | | 4.968 | | - | | 4.968 | Continuing | Continuing | N/A |

Remarks
 Program Management Support includes Program Office support, Cost Estimation support, Acquisition Documentation Support, and Program Office travel. Beginning in FY 2020, a portion of the PM Support costs are realigned to SCN Line Item 2128.

| | Prior Years | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 84.594 | 137.655 | 132.775 | 59.007 | - | 59.007 | Continuing | Continuing | N/A |

Remarks

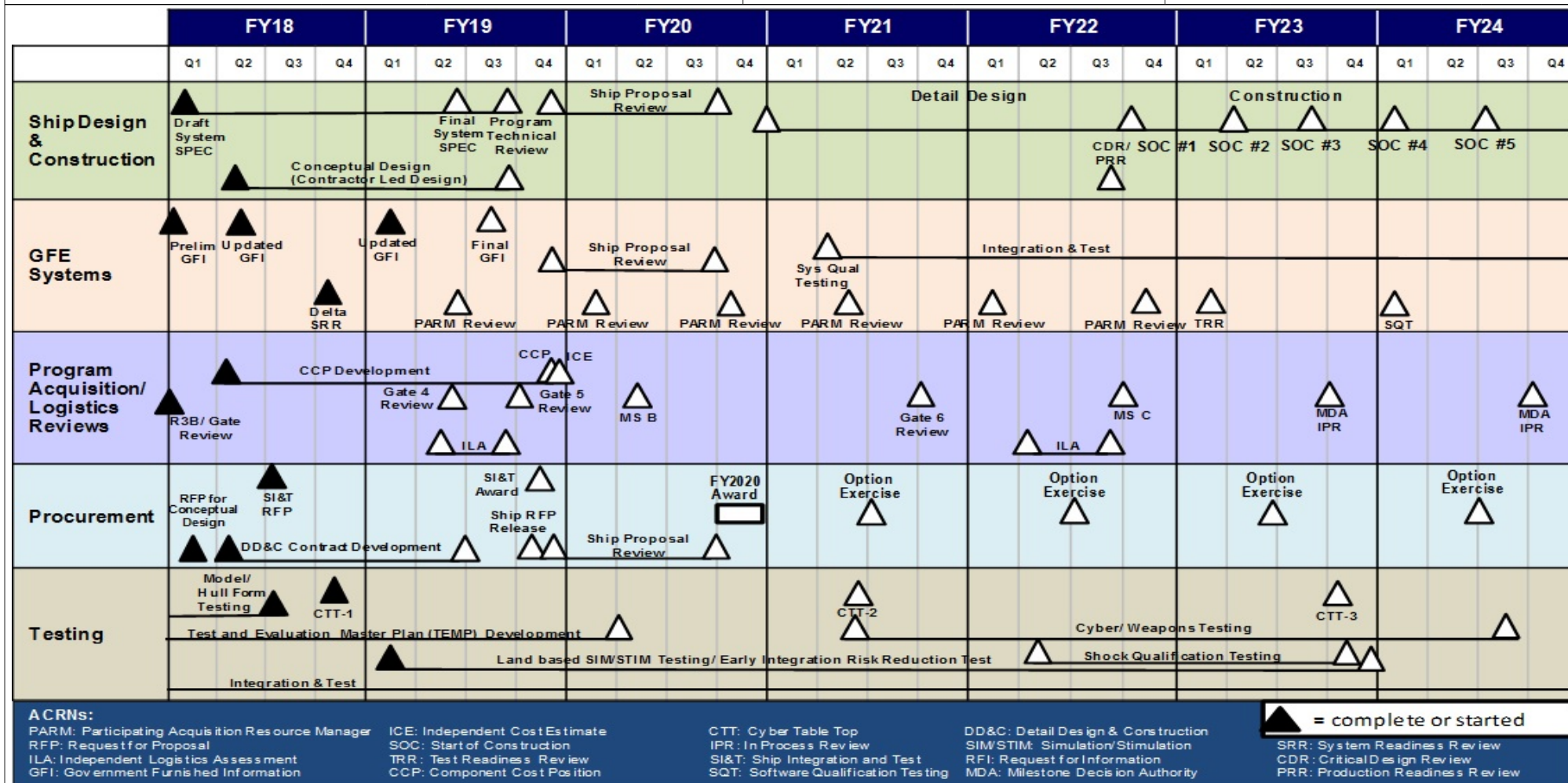
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R-1 Line #54

1319 / 4

PE 0603599N / (U)Frigate Development

3086 / *Frigate*

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| Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy | | | Date: March 2019 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | Project (Number/Name) 3086 / Frigate | |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 3086 | | | | |
| Ship Design: Draft System SPEC Approval | 1 | 2018 | 1 | 2018 |
| Ship Design: System SPEC Development | 1 | 2018 | 2 | 2019 |
| Ship Design: Conceptual Design (Contractor Led Design) | 2 | 2018 | 3 | 2019 |
| Ship Design: Final System SPEC Approval | 2 | 2019 | 2 | 2019 |
| Ship Design: Program Technical Review | 3 | 2019 | 3 | 2019 |
| Ship Design: Production (Ship) Proposal Review | 4 | 2019 | 3 | 2020 |
| GFE Systems: Preliminary Government Furnished Information (GFI) | 1 | 2018 | 1 | 2018 |
| GFE Systems: Updated GFI #1 | 2 | 2018 | 2 | 2018 |
| GFE Systems: Combat System (CS) Software Delta System Requirements Review (SRR) | 4 | 2018 | 4 | 2018 |
| GFE Systems: Updated GFI #2 | 1 | 2019 | 1 | 2019 |
| GFE Systems: CS In Process Review (IPR) #1 | 2 | 2019 | 2 | 2019 |
| GFE Systems: Final GFI | 3 | 2019 | 3 | 2019 |
| GFE Systems: Production (Ship) Proposal Review | 4 | 2019 | 3 | 2020 |
| GFE Systems: CS In Process Review (IPR) #2 | 1 | 2020 | 1 | 2020 |
| GFE Systems: CS In Process Review (IPR) #3 | 4 | 2020 | 4 | 2020 |
| GFE Systems: System Qualification Testing | 2 | 2021 | 2 | 2021 |
| GFE Systems: CS Integration and Testing | 2 | 2021 | 4 | 2024 |
| GFE Systems: CS In Process Review (IPR) #4 | 2 | 2021 | 2 | 2021 |
| GFE Systems: CS In Process Review (IPR) #5 | 1 | 2022 | 1 | 2022 |
| GFE Systems: CS In Process Review (IPR) #6 | 4 | 2022 | 4 | 2022 |
| GFE Systems: CS Software Technical Readiness Review (TRR) | 1 | 2023 | 1 | 2023 |

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|---|---|------|---|------|
| Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy | | | Date: March 2019 | |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | Project (Number/Name) 3086 / Frigate | |
| | Start | | End | |
| Events by Sub Project | Quarter | Year | Quarter | Year |
| GFE Systems: Software Qualification Testing (SQT) | 1 | 2024 | 1 | 2024 |
| Program Acquisition/Logistics Reviews: R3B/Gate Review | 1 | 2018 | 1 | 2018 |
| Program Acquisition/Logistics Reviews: Component Cost Position (CCP) Development | 2 | 2018 | 4 | 2019 |
| Program Acquisition/Logistics Reviews: Final CCP | 4 | 2019 | 4 | 2019 |
| Program Acquisition/Logistics Reviews: Independent Cost Analysis Assessment (ILA) Development | 2 | 2019 | 3 | 2019 |
| Program Acquisition/Logistics Reviews: Gate 4 Review | 2 | 2019 | 2 | 2019 |
| Program Acquisition/Logistics Reviews: Gate 5 Review | 4 | 2019 | 4 | 2019 |
| Program Acquisition/Logistics Reviews: Independent Cost Estimates (ICE) | 4 | 2019 | 4 | 2019 |
| Program Acquisition/Logistics Reviews: Milestone B | 2 | 2020 | 2 | 2020 |
| Program Acquisition/Logistics Reviews: Milestone Decision Authority (MDA) IPR #1 | 4 | 2020 | 4 | 2020 |
| Program Acquisition/Logistics Reviews: Gate 6 Review | 4 | 2021 | 4 | 2021 |
| Program Acquisition/Logistics Reviews: Independent Logistics Assessment (ILA) Development | 2 | 2022 | 3 | 2022 |
| Program Acquisition/Logistics Reviews: Milestone C | 4 | 2022 | 4 | 2022 |
| Program Acquisition/Logistics Reviews: Milestone Decision Authority (MDA) IPR #2 | 4 | 2023 | 4 | 2023 |
| Program Acquisition/Logistics Reviews: Milestone Decision Authority (MDA) IPR #3 | 4 | 2024 | 4 | 2024 |
| Procurement: Request for Proposal (RFP) Conceptual Design | 1 | 2018 | 1 | 2018 |
| Procurement: Detail Design & Construction (DD&C) Contract Development | 2 | 2018 | 2 | 2019 |
| Procurement: Ship Integration and Testing (SI&T) RFP | 3 | 2018 | 3 | 2018 |
| Procurement: Production (Ship) RFP Release | 4 | 2019 | 4 | 2019 |
| Procurement: Production (Ship) Proposal Review | 4 | 2019 | 3 | 2020 |
| Procurement: Ship Integration and Test (SI&T) Award | 1 | 2020 | 1 | 2020 |
| Procurement: Production (Ship) Award | 4 | 2020 | 4 | 2020 |
| Procurement: R3B/Gate Review | 2 | 2023 | 2 | 2023 |
| Testing: Model/Hull Form Testing | 1 | 2018 | 3 | 2018 |
| Testing: Test and Evaluation Master Plan (TEMP) Development | 1 | 2018 | 2 | 2020 |

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|--|--|---|------------------|---|------|
| Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy | | | Date: March 2019 | | |
| Appropriation/Budget Activity 1319 / 4 | | R-1 Program Element (Number/Name) PE 0603599N / (U)Frigate Development | | Project (Number/Name) 3086 / Frigate | |
| | | Start | | End | |
| Events by Sub Project | | Quarter | Year | Quarter | Year |
| Testing: Cyber Table Top (CTT)-1 | | 4 | 2018 | 4 | 2018 |
| Testing: Cyber Table Top (CTT)-2 | | 2 | 2020 | 2 | 2020 |
| Testing: Land Based Testing | | 1 | 2019 | 4 | 2023 |
| Testing: Shock Qualification Testing | | 2 | 2022 | 4 | 2023 |
| Testing: Cyber Table Top (CTT)-3 | | 4 | 2023 | 4 | 2023 |
| Testing: Cyber/Weapons Testing | | 3 | 2022 | 3 | 2024 |
| Testing: Integration and Test Efforts | | 1 | 2018 | 4 | 2024 |