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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy **Date:** March 2024

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| Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P) | R-1 Program Element (Number/Name) PE 0604659N / Precision Strike Weapons Development Program |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 57.566 | 33.719 | 5.976 | 5.667 | - | 5.667 | 5.577 | 5.627 | 5.682 | 5.801 | Continuing | Continuing |
| 3378: Next Generation Strike Weapons | 45.653 | 2.702 | 2.932 | 2.886 | - | 2.886 | 2.905 | 2.948 | 2.955 | 3.015 | Continuing | Continuing |
| 3409: Advanced Aerial Refueling Store | 4.608 | 6.543 | 2.216 | 2.230 | - | 2.230 | 2.239 | 2.240 | 2.280 | 2.328 | Continuing | Continuing |
| 3411: CAD/PAD Digital Twin Modeling | 1.513 | 0.340 | 0.828 | 0.551 | - | 0.551 | 0.433 | 0.439 | 0.447 | 0.458 | Continuing | Continuing |
| 9999: Congressional Adds | 5.792 | 24.134 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 29.926 |

Program MDAP/MAIS Code:
Project MDAP/MAIS Code(s): 570

A. Mission Description and Budget Item Justification

Initial and continuing development of strike weapons consisting of armament, munitions, and weapon subsystems to allow for horizontal integration among current and future weapon system capabilities to provide enhanced anti-surface and land strike capabilities in a demanding Anti-Access Area-Denial environment. This program provides for the development of weapon and weapon system technologies to address future requirements for enhanced and alternative weapon system capability requirements that include selectable output weapons, low collateral damage weapons, precision lethality weapons, area weapons, alternative warhead technology, Insensitive Munitions (IM), scaled munitions, Department of Defense (DoD) fuzing systems, sensors, extended range weapons, precision guided training rounds, aerial refueling, fuel containment, and technologies associated with cartridge actuated devices/propellant actuated devices.

PROJ 3378: Next Generation Strike Weapon (NGSW) Family of Systems (FoS) based on the NGLAW Analysis of Alternatives (AoA) completed with results briefed out to OSD. NGSW FoS more accurately reflects the surface/submarine capabilities for land-attack and maritime strike that the AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining this capability allows expedited analysis of systems and fully informed investment decisions.

PROJ 3409: Development and fielding of the Advanced Aerial Refueling Store (AARS). The AARS effort is the result of an Operation Navy (OPNAV) Future Readiness Initiative (FRI) award. The AARS will package new technologies into this upgraded Aerial Refueling Store (ARS) to support both manned and unmanned (automated) aerial refueling from platforms such as F/A-18 and MQ-25. In doing so, the AARS will facilitate tanking operations to both manned and unmanned receivers and improve safety of flight by stabilizing the aerial refueling drogue and incorporating better health and diagnostics. These improvements will be accomplished by providing updated store health message content and additional health monitoring Built-In Tests (BITS) that will be sent over the 1553 data-bus. The AARS will also add receiver and

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| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i> | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> |
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drogue position data for situational awareness and support autonomous receiver engagements of unmanned systems. This in turn will increase reliability and decrease aerial refueling mishaps, providing a significant safety and readiness improvement when compared with the current ARS.

PROJ 3411: Cartridge Actuated Device / Propellant Actuated Device (CAD/PAD) Digital Twin Modeling to develop and validate models and algorithms for the Department of the Navy (DoN). The development effort is specific to Navy Air Crew Common Ejection Seats (NACES). These models will also be used to support initial service life decisions, service life extension decisions, and address obsolescence.

PROJ 3467: This project will design, develop, produce and deploy a Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N). SLCM-N is scoped to deliver an integrated flight system and to continue to advance SLCM-N capabilities to fully address requirements identified in the 2018 Nuclear Posture Review, SLCM-N Initial Capabilities Document, and examined in the Analysis of Alternatives to mitigate a lack of a sea based tactical nuclear based system.

PROJ 9999: C762 Neutron radiography (N-ray) is a critical nondestructive inspection technique used to complement X-ray. N-ray and X-ray are used to detect defects and proper assembly of a variety of energetics, including Cartridge and Propellant Actuated Devices (CAD/PADs). The US Navy intends to continue to employ neutron radiographic inspection to support energetics programs for the foreseeable future.

C880: SLCM-N This project will conduct system development and demonstration of nuclear-capable sea-launched cruise missile.

JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES because it includes all efforts necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

| B. Program Change Summary (\$ in Millions) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 34.824 | 5.976 | 3.556 | - | 3.556 |
| Current President's Budget | 33.719 | 5.976 | 5.667 | - | 5.667 |
| Total Adjustments | -1.105 | 0.000 | 2.111 | - | 2.111 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | -1.105 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | 2.115 | - | 2.115 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | -0.004 | - | -0.004 |

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

Project: 9999: *Congressional Adds*

| | FY 2023 | FY 2024 |
|--|----------------|----------------|
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| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i> | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> |
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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Congressional Add: *SLCM-N*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

| | FY 2023 | FY 2024 |
|---|---------|---------|
| | 24.134 | 0.000 |
| Congressional Add Subtotals for Project: 9999 | 24.134 | 0.000 |
| Congressional Add Totals for all Projects | 24.134 | 0.000 |

Change Summary Explanation

No significant changes in FY 2025 from previous President's Budget

PROJ 3378: NGSW

Removed NGSW FY 2022 Threat Update

Added NGSW FY 2028 Threat Update Q1 2028-Q4 2028

NGSW Threat Updates Mission Modeling changed from Q1 2021-Q4 2027 to Q1 2022-Q4 2028

NGSW Threat Updates Modeling Updates changed from Q1 2021-Q4 2027 to Q1 2022-Q4 2028

Removed Technology Investment Enablers for INC I / INC II Capabilities Q4 2021-Q4 2021

Study Opportunity changed from Q1 2021-Q4 2027 to Q1 2022-Q4 2028

Removed Weapon/Platform Tradespace Analysis Q1 2021-Q4 2021

Removed NGSW AoA Update

Removed FY 2022 Security and HW Update

Removed FY 2022 Info Update

FY 2023 Security and HW Update changed from Q2 2023-Q2 2023 to Q2 2023-Q3 2023

FY 2023 Info Update changed from Q3 2023-Q3 2023 to Q3 2023-Q4 2023

FY 2024 Security and HW Update Q2 2024-Q2 2024 to Q2 2024-Q3 2024

FY 2024 Info Update Q3 2024-Q3 2024 to Q3 2024-Q4 2024

FY 2025 Security and HW Update Q2 2025-Q2 2025 to Q2 2025 Q3 2025

FY 2025 Info Update Q3 2025-Q3 2025 to Q3 2025-Q4 2025

FY 2026 Security and HW Update Q2 2026-Q2 2026 to Q2 2026-Q3 2026

FY 2026 Info Update Q3 2026-Q3 2026 to Q3 2026 Q4 2026

FY 2027 Security and HW Update Q2 2027-Q2 2027 to Q2 2027-Q3 2027

FY 2027 Info Update Q3 2027-Q3 2027 to Q3 2027-Q4 2027

Added FY 2028 Security and HW Update Q2 2028-Q3 2028

Added FY 2028 Info Update Q3 2028-Q4 2028

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319: <i>Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)</i> | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | |
| <p>PROJ 3409: \$2.230 million added to FY 2025 (\$11.317 million across FYDP) for AARS development wholeness and support development of future modifications to Carrier Airwing ARS for MQ-25 and the Airwing of The Future (AWOTF) including improving optical automated systems for manned/unmanned CVW-based air to air refueling and developing optical/visual reference systems for unmanned-to-unmanned CVW-based air to air refueling.</p> | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | | | | | | | | | Date: March 2024 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | | | | Project (Number/Name) 3378 / <i>Next Generation Strike Weapons</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
| 3378: <i>Next Generation Strike Weapons</i> | 45.653 | 2.702 | 2.932 | 2.886 | - | 2.886 | 2.905 | 2.948 | 2.955 | 3.015 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |
| Project MDAP/MAIS Code: 570 | | | | | | | | | | | | |

A. Mission Description and Budget Item Justification

Funding is provided for the Next Generation Strike Weapon (NGSW) Family of Systems (FoS) based on the NGLAW Analysis of Alternatives (AoA) completed with results briefed out to OSD. NGSW FoS more accurately reflects the surface/submarine capabilities for land-attack and maritime strike that the AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining this capability allows expedited analysis of systems and fully informed investment decisions. Further funding supports investment for technologies which enable Increment II capabilities (additional details are held at a higher classification).

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

| | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Next Generation Strike Weapon (NGSW) | 2.702 | 2.932 | 2.886 | 0.000 | 2.886 |
| Articles: | - | - | - | - | - |
| FY 2024 Plans: Continue annual security, IT and Decision Support System updates for latest threat data, launch platform (offensive and defensive) capabilities. Augment Multi-domain assessment of dynamic US capabilities, mission integration, and lifecycle cost estimate. Generate Course of Actions and corresponding warfighting tradespace analytical relationships of existing and future warfighting capabilities and ultimately generate and recommend potential ways to better utilize current force structures or invest more judiciously in future capabilities over time. Focus mainly on the inclusion and integration of potential uncrewed US assets into the analytical trade space as well as the value propositions of these investments over multiple geographical scenarios and time epochs. | | | | | |
| FY 2025 Base Plans: Continue annual security, IT and Decision Support System updates for latest threat data, launch platform (offensive and defensive) capabilities. Augment Multi-domain assessment of dynamic US capabilities, mission integration, and lifecycle | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3378 / <i>Next Generation Strike Weapons</i> |

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p>cost estimate. Incorporate USN Ship defense capabilities. Generate Course of Actions and corresponding warfighting tradespace analytical relationships of existing and future warfighting capabilities and ultimately generate and recommend potential ways to better utilize current force structures or invest more judiciously in future capabilities over time. Focus mainly on the inclusion and integration of potential uncrewed US assets into the analytical trade space as well as the value propositions of these investments over multiple geographical scenarios and time epochs.</p> <p>FY 2025 OCO Plans: N/A</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Decrease from FY 2024 to FY 2025 due to reduction in NSMA support.</p> | | | | | |
| Accomplishments/Planned Programs Subtotals | 2.702 | 2.932 | 2.886 | 0.000 | 2.886 |

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

N/A

Remarks

D. Acquisition Strategy

NGSW FoS more accurately reflects the multi-domain capabilities for land-attack and maritime strike that the NGLAW AoA results identified for the most capable and economic solutions fielding incrementally between 2020 and 2032. NGSW FoS Increments I and II will leverage mature as well as emerging technologies vice developing a single weapon. NGSW funding will maintain the security environment (enclave), facility, and study team to enable continuing analysis efforts across the FoS. The NGSW enclave ensures the Navy is able to maintain the most up to date modeled threats and validate the effectiveness of current US weapons, offensive and defensive, as well as future systems and concepts developed by industry and other DoD organizations. Maintaining the enclave allows expedited analysis of systems and fully informed investment decisions.

NGSW FoS funding will support Increment II development of technologies to enable capabilities identified in the NGLAW AoA for integration in future systems. Additional details are held at a higher classification.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy **Date:** March 2024

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| Product Development (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| INC II Technologies | C/CPFF | TBD : TBD | 1.994 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| FMB withhold | TBD | TBD : TBD | 10.900 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 10.900 | - |
| Subtotal | | | 12.894 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | N/A |

Remarks
Development of technologies/components to support NGSW Increment II capabilities for integration in future systems. Additional details are held at a higher classification.

| Support (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Development Support | WR | NAWC-WD : China Lake, CA | 2.475 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| Development Support- AIR 4.0M | WR | NAWC-AD : Patuxent River, MD | 3.249 | 0.017 | Jan 2023 | 0.044 | Jan 2024 | 0.045 | Jan 2025 | - | | 0.045 | Continuing | Continuing | Continuing |
| Development Support | SS/CPFF | JHU/APL : Laurel, MD | 12.304 | 1.369 | Dec 2022 | 0.701 | Nov 2023 | 0.715 | Nov 2024 | - | | 0.715 | Continuing | Continuing | Continuing |
| Weapons Control System | WR | NSWC-DD : Dahlgren, VA | 0.050 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.050 | Continuing |
| Development Support | WR | NSMA : JBAB, DC | 12.895 | 1.264 | Feb 2023 | 2.093 | Feb 2024 | 2.030 | Feb 2025 | - | | 2.030 | 0.000 | 18.282 | Continuing |
| Development Support | MIPR | NRO : Chantilly, VA | 0.569 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.569 | Continuing |
| Development Support | WR | NSWC-NPT : Newport, RI | 0.050 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.050 | Continuing |
| Development Support | C/CPFF | SSP : WNY, DC | 0.700 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.700 | - |
| Subtotal | | | 32.292 | 2.650 | | 2.838 | | 2.790 | | - | | 2.790 | Continuing | Continuing | N/A |

Remarks
Annual enclave updates, annual DSS updates, multi-domain assessment, mission integration, support OASUW analysis, conduct SLCM-N AoA study and initiate update to previous NGLAW AoA.

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy **Date:** March 2024

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| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3378 / <i>Next Generation Strike Weapons</i> |
|--|---|--|

| Fiscal Year | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | | FY 2029 | | | |
|---------------------------|------------------------|----|----|----|------------------------|----|----|----|------------------------|----|----|----|------------------------|----|----|----|------------------------|----|----|----|------------------------|----|----|----|------------------------|----|----|----|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| NGSW Threat Update | Threat Update | | | | Threat Update | | | | Threat Update | | | | Threat Update | | | | Threat Update | | | | Threat Update | | | | | | | |
| | Mission Modeling | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Modeling Updates | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional Studies | Study Opportunity | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Facility | Security and HW Update | | | | Security and HW Update | | | | Security and HW Update | | | | Security and HW Update | | | | Security and HW Update | | | | Security and HW Update | | | | Security and HW Update | | | |
| | Info Update | | | | Info Update | | | | Info Update | | | | Info Update | | | | Info Update | | | | Info Update | | | | | | | |
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| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3378 / <i>Next Generation Strike Weapons</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 3378 | | | | |
| NGSW Threat Updates: NGSW FY 2023 Threat Update | 1 | 2023 | 4 | 2023 |
| NGSW Threat Updates: NGSW FY 2024 Threat Update | 1 | 2024 | 4 | 2024 |
| NGSW Threat Updates: NGSW FY 2025 Threat Update | 1 | 2025 | 4 | 2025 |
| NGSW Threat Updates: NGSW FY 2026 Threat Update | 1 | 2026 | 4 | 2026 |
| NGSW Threat Updates: NGSW FY 2027 Threat Update | 1 | 2027 | 4 | 2027 |
| NGSW Threat Updates: NGSW FY 2028 Threat Update | 1 | 2028 | 4 | 2028 |
| NGSW Threat Updates: NGSW FY 2029 Threat Update | 1 | 2029 | 4 | 2029 |
| NGSW Threat Updates: NGSW Threat Updates Mission Modeling | 1 | 2023 | 4 | 2029 |
| NGSW Threat Updates: NGSW Threat Updates Modeling Updates | 1 | 2023 | 4 | 2029 |
| Additional Studies: Study Opportunity | 1 | 2023 | 4 | 2029 |
| Facility: FY 2023 Security and HW Update | 2 | 2023 | 3 | 2023 |
| Facility: FY 2023 Info Update | 3 | 2023 | 4 | 2023 |
| Facility: FY 2024 Security and HW Update | 2 | 2024 | 3 | 2024 |
| Facility: FY 2024 Info Update | 3 | 2024 | 4 | 2024 |
| Facility: FY 2025 Security and HW Update | 2 | 2025 | 3 | 2025 |
| Facility: FY 2025 Info Update | 3 | 2025 | 4 | 2025 |
| Facility: FY 2026 Security and HW Update | 2 | 2026 | 3 | 2026 |
| Facility: FY 2026 Info Update | 3 | 2026 | 4 | 2026 |
| Facility: FY 2027 Security and HW Update | 2 | 2027 | 3 | 2027 |
| Facility: FY 2027 Info Update | 3 | 2027 | 4 | 2027 |
| Facility: FY 2028 Security and HW Update | 2 | 2028 | 3 | 2028 |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3378 / <i>Next Generation Strike Weapons</i> |

| Events by Sub Project | Start | | End | |
|--|----------------|-------------|----------------|-------------|
| | Quarter | Year | Quarter | Year |
| Facility: FY 2028 Info Update | 3 | 2028 | 4 | 2028 |
| Facility: FY 2029 Security and HW Update | 2 | 2029 | 3 | 2029 |
| Facility: FY 2029 Info Update | 3 | 2029 | 4 | 2029 |

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| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | | | | | | | | | Date: March 2024 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | | | | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
| 3409: <i>Advanced Aerial Refueling Store</i> | 4.608 | 6.543 | 2.216 | 2.230 | - | 2.230 | 2.239 | 2.240 | 2.280 | 2.328 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Advanced Aerial Refueling Store (AARS) is a collection of modifications to individual Aerial Refueling Store (ARS) components that will improve performance and readiness. The ARS updates will package new technologies into the existing store that will support both manned and unmanned (automated) aerial refueling from platforms such as the F/A-18 and MQ-25. These technologies include drogue stabilization, drogue positioning sensors, advanced health and diagnostic capability and real time receiver situational awareness for the unmanned mission operator. These updates will increase safety of flight, facilitate unmanned tanking operations to both manned and unmanned receivers and improve overall ARS reliability.

The Digital Controller Upgrade (DCU) with Optical Reference System (ORS) is a hardware and software update to existing components which will provide increased flight safety through monitoring/diagnostic capabilities and enhanced situational awareness to reduce mission aborts. Drogue Stabilization incorporates hardware and software updates to improve the Aerial Refueling Stores ability to hold the drogue in position for refueling actions, and also improve the ability for the receiving platform to maneuver into position for refueling which decreases the risk of refueling mishaps, reduces mission aborts which improves operational efficiency and safety. Hydraulic System Improvements will update hardware to increase hydraulic efficiency by eliminating high failure rate components, improving fuel offload and reducing power demands on the Ram Air Turbine (RAT).

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

| | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Advanced Aerial Refueling Store | 6.543 | 2.216 | 2.230 | 0.000 | 2.230 |
| Articles: | - | - | - | - | - |
| FY 2024 Plans: FY 2024 funding will continue the DCU development of the existing Aerial Refueling Stores and begins Hydraulic System Improvements Development. Funding provided for the development includes surrogate flight testing of the DCU and the continuation of software and power supply development and prototyping. | | | | | |
| FY 2025 Base Plans: FY 2025 funding will continue Hydraulic System Improvements Development and begin ORS software/hardware development. Funding will provide for the development includes surrogate flight testing. | | | | | |
| FY 2025 OCO Plans: | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> |

| B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each) | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|
| N/A | | | | | |
| <i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> The increase of \$0.014 million from FY 2024 to FY 2025 is attributed to the increase in effort on the ORS development. | | | | | |
| Accomplishments/Planned Programs Subtotals | 6.543 | 2.216 | 2.230 | 0.000 | 2.230 |

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

| Line Item | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|------------------------------------|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • APN/0720: <i>War Consumables</i> | 40.261 | 44.632 | 43.604 | - | 43.604 | 49.926 | 50.576 | 51.054 | 51.964 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

The Advanced Aerial Refueling Store (AARS) development program will mature and integrate modifications to improve the existing Aerial Refueling Store (ARS). The Advanced Aerial Refueling Store (AARS) program will develop, prototype and test the next generation Aerial Refueling Store (ARS) utilizing a hybrid program structure to capitalize on existing technologies that can be incorporated into the existing ARS to improve reliability and readiness while also increasing safety during refueling. The AARS technologies will be fielded as a series of individual modifications to the ARS.

The ARS improvement program will center on the Digital Controller Upgrade (DCU) and Optical Reference System (ORS). The DCU utilizes government owned software and hardware to command and control the refueling store. The remainder of the AARS upgrades will be built around this government owned DCU. Based on current technology assessments, the program anticipates incorporating an Optical Reference System into the DCU to improve performance and reduce risk during refueling. Additional technologies that will be evaluated include drogue stabilization sensors, positioning, improved health and diagnostics and real time receiver situational awareness for unmanned mission operators.

The program will use regular technical interchanges to coordinate with F/A-18 and MQ-25 platforms to maximize effectiveness of the technology upgrades across both manned and unmanned environments. Government owned technical data package will be available for full and open competition leading to contract award.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy **Date:** March 2024

| | | |
|--|---|---|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Digital Controller Upgrade Dev & Int | SS/CPFF | CTSi : Hollywood, MD | 3.000 | 3.736 | Dec 2022 | 0.458 | Nov 2023 | 0.000 | | - | | 0.000 | 0.000 | 7.194 | 7.194 |
| Government Systems Engineering | WR | NAWCAD : Patuxent River, MD | 0.608 | 0.807 | Jan 2023 | 0.300 | Nov 2023 | 0.585 | Nov 2024 | - | | 0.585 | Continuing | Continuing | Continuing |
| Hydraulic System Improvements Development | WR | NAWCAD : Patuxent River, MD | 0.000 | 0.000 | | 0.458 | Nov 2023 | 0.350 | Feb 2025 | - | | 0.350 | Continuing | Continuing | Continuing |
| Drogue Stabilization Development | SS/CPFF | TBD : TBD | 1.000 | 0.000 | | 0.000 | | 0.095 | Feb 2025 | - | | 0.095 | 1.655 | 2.750 | 2.750 |
| Flight Test OTA | SS/FFP | Calspan : Buffalo, NY | 0.000 | 1.000 | Apr 2023 | 0.800 | Feb 2024 | 0.000 | | - | | 0.000 | Continuing | Continuing | Continuing |
| ORS Development | SS/CPFF | CTSi : Hollywood, MD | 0.000 | 0.000 | | 0.000 | | 0.200 | Feb 2025 | - | | 0.200 | Continuing | Continuing | Continuing |
| Subtotal | | | 4.608 | 5.543 | | 2.016 | | 1.230 | | - | | 1.230 | Continuing | Continuing | N/A |

Remarks
Government system engineering increases from FY 2024 to FY 2025 for ORS SW/HW development and flight tests.

| Test and Evaluation (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Developmental Test & Evaluation (DT&E) | WR | NAWCAD : Patuxent River, MD | 0.000 | 0.333 | Jan 2023 | 0.200 | Nov 2023 | 0.333 | Nov 2024 | - | | 0.333 | Continuing | Continuing | Continuing |
| Developmental Test & Evaluation (DT&E) | SS/CPFF | CTSi : Hollywood, MD | 0.000 | 0.667 | Dec 2022 | 0.000 | | 0.667 | Jun 2025 | - | | 0.667 | Continuing | Continuing | Continuing |
| Subtotal | | | 0.000 | 1.000 | | 0.200 | | 1.000 | | - | | 1.000 | Continuing | Continuing | N/A |

Remarks
FY 2025 increase in Test and Evaluation is to support required ORS testing.

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| | | | | | | | | | | | | | |
|---|--------------------|----------------|--|---|--|---------------------|--|---|--|----------------------|-------------------------|-------------------|---------------------------------|
| Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy | | | | | | | | Date: March 2024 | | | | | |
| Appropriation/Budget Activity 1319 / 4 | | | | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | | | | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> | | | | | |
| | Prior Years | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | 4.608 | 6.543 | | 2.216 | | 2.230 | | - | | 2.230 | Continuing | Continuing | N/A |

Remarks

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| | | |
|---|---|---|
| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 3409 | | | | |
| AARS Development: AARS Engineering Development - Gov | 1 | 2023 | 4 | 2029 |
| AARS Development: DCU Development & Integration Effort | 1 | 2023 | 4 | 2025 |
| AARS Development: ORS Software Spiral 1&2 Development | 1 | 2023 | 2 | 2025 |
| AARS Development: ORS Software Spiral 3 Development | 2 | 2025 | 1 | 2026 |
| AARS Development: ORS Stabilized Drogue Integration | 1 | 2026 | 4 | 2027 |
| AARS Development: Power Supply Development - Gov | 2 | 2023 | 3 | 2024 |
| AARS Development: Hydraulic Systems Development Effort | 1 | 2024 | 3 | 2026 |
| AARS Development: DCU Software Qualification | 3 | 2024 | 3 | 2025 |
| AARS Development: DCU Hardware Production Qualification | 3 | 2024 | 1 | 2025 |
| AARS Development: ORS Software Qualification | 1 | 2025 | 1 | 2026 |
| AARS Development: ORS Hardware Production Qualification | 2 | 2025 | 1 | 2026 |
| AARS Development: ORS Version 2 | 1 | 2027 | 4 | 2028 |
| AARS Development: PMA-201 A4RS Delta Qualification | 1 | 2027 | 4 | 2027 |
| AARS Development: DCU/ORS Prototype | 2 | 2023 | 2 | 2023 |
| AARS Development: DCU PDR/CDR | 2 | 2024 | 2 | 2024 |
| AARS Development: ORS PDR | 4 | 2024 | 4 | 2024 |
| AARS Development: ORS CDR | 2 | 2025 | 2 | 2025 |
| AARS Development: DCU ECP Approval | 1 | 2026 | 1 | 2026 |
| AARS Development: ORS ECP Approval | 3 | 2026 | 3 | 2026 |
| AARS Development: Hydraulic Systems ECP Approval | 4 | 2026 | 4 | 2026 |
| AARS Development: A4RS Delta CDR | 1 | 2027 | 1 | 2027 |

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy **Date:** March 2024

| | | |
|--|---|---|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> |
|--|---|---|

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| AARS Development: A4RS ECP | 4 | 2027 | 4 | 2027 |
| AARS Development: A4RS IOC | 1 | 2028 | 1 | 2028 |
| Testing: DCU & ORS Prototype Flight Test 1 | 3 | 2023 | 1 | 2024 |
| Testing: DCU & ORS Prototype Flight Test 2 | 4 | 2024 | 1 | 2025 |
| Testing: F-18 DCU Airworthiness Verification Flight Test | 3 | 2025 | 1 | 2026 |
| Testing: F-18 ORS Airworthiness Verification Flight Test | 1 | 2026 | 3 | 2026 |
| Testing: F-18 ORS/Stabilized Drogue Qualification Flight Test | 1 | 2027 | 3 | 2027 |
| Testing: ORS Version 2 & Data Link Prototype Flight Test | 1 | 2028 | 2 | 2028 |
| Testing: MQ25 ORS Version 2 & Data Link Qualification Flight Test | 3 | 2028 | 1 | 2029 |
| Testing: MQ25 ORS Version 2 & Data Link Airworthiness Verification Flight Test | 1 | 2029 | 4 | 2029 |
| Contracts: DCU Prototype Qualification Risk Reduction CA | 4 | 2023 | 4 | 2023 |
| Contracts: DCU Production Qualification CA | 2 | 2024 | 2 | 2024 |
| Contracts: ORS Prototype Qualification CA | 2 | 2025 | 2 | 2025 |
| Contracts: Hydraulic Systems Development/Qualification CA | 2 | 2025 | 2 | 2025 |
| Contracts: DCU Test Set CA | 4 | 2025 | 4 | 2025 |
| Production (APN Funded): DCU LRIP CA | 2 | 2025 | 2 | 2025 |
| Production (APN Funded): DCU LRIP | 2 | 2025 | 4 | 2025 |
| Production (APN Funded): DCU Production CA | 1 | 2026 | 1 | 2026 |
| Production (APN Funded): DCU Production | 1 | 2026 | 2 | 2027 |
| Production (APN Funded): ORS LRIP CA | 4 | 2025 | 4 | 2025 |
| Production (APN Funded): ORS LRIP | 1 | 2026 | 3 | 2026 |
| Production (APN Funded): ORS Production CA | 3 | 2026 | 3 | 2026 |
| Production (APN Funded): ORS Production | 4 | 2026 | 4 | 2027 |
| Production (APN Funded): Hydraulic Systems Production CA | 4 | 2026 | 4 | 2026 |
| Production (APN Funded): Hydraulic Systems Production | 4 | 2026 | 1 | 2028 |

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy **Date:** March 2024

| | | |
|--|---|---|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3409 / <i>Advanced Aerial Refueling Store</i> |
|--|---|---|

| Events by Sub Project | Start | | End | |
|---|----------------|-------------|----------------|-------------|
| | Quarter | Year | Quarter | Year |
| Production (APN Funded): A4RS Production CA | 2 | 2028 | 2 | 2028 |
| Production (APN Funded): A4RS Production | 3 | 2028 | 3 | 2029 |

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|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | | | | | | | | | Date: March 2024 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0604659N / Precision Strike Weapons Development Program | | | | Project (Number/Name) 3411 / CAD/PAD Digital Twin Modeling | | | |
| COST (\$ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
| 3411: CAD/PAD Digital Twin Modeling | 1.513 | 0.340 | 0.828 | 0.551 | - | 0.551 | 0.433 | 0.439 | 0.447 | 0.458 | Continuing | Continuing |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Cartridge Actuated Devices/ Propellant Actuated Devices (CAD/PAD) Digital Twin Modeling will develop and validate models and algorithms for the Department of the Navy (DoN). Digital Twin is a software model that predicts service life of a components' energetic material. This will be used to move towards a Condition Based Maintenance Model vice restrictive service life. The development will be phased over three efforts, specific to Navy AirCrew Common Ejection Seats (NACES). These models will be used as a starting point for a condition-based service life for CAD/PAD. A condition-based service life will result in long term cost savings for the DoN by enabling CAD/PAD to be installed for full useful service life. These models will also be used to support initial service life decisions, service life extension decisions and address obsolescence.

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

| | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: CAD/PAD Digital Twin Modeling | 0.340 | 0.828 | 0.551 | 0.000 | 0.551 |
| Articles: | - | - | - | - | - |
| FY 2024 Plans: Software security compliance tests will be conducted to ensure developed software meets software security and DOD cloud cyber security requirements. The tests will be conducted in FY 2024 during the software integration phase. | | | | | |
| FY 2025 Base Plans: Testing during the software integration phase continue. Software security compliance tests will continue to ensure developed software meets software security and DOD cloud cyber security requirements. | | | | | |
| FY 2025 OCO Plans: N/A | | | | | |
| FY 2024 to FY 2025 Increase/Decrease Statement: Decreased funding coincides with the conclusion of Software and Hardware testing that end Phase III in FY 2025. | | | | | |
| Accomplishments/Planned Programs Subtotals | 0.340 | 0.828 | 0.551 | 0.000 | 0.551 |

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|--|---|---|
| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3411 / <i>CAD/PAD Digital Twin Modeling</i> |

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

| <u>Line Item</u> | <u>FY 2023</u> | <u>FY 2024</u> | <u>FY 2025</u> <u>Base</u> | <u>FY 2025</u> <u>OCO</u> | <u>FY 2025</u> <u>Total</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>FY 2029</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • PANMC/0180: <i>CARTRIDGE ACTUATED DEVICES/ PROPELLANT ACT DEVICES</i> | 71.391 | 72.426 | 73.782 | - | 73.782 | 75.180 | 76.770 | 79.045 | 80.717 | Continuing | Continuing |

Remarks

The software development for CAD/PAD products to support inventory objectives by transitioning to condition based maintenance. Recent investigations into life cycle cost savings, safety mitigation and reliability of products indicate that a substantial costs savings could be realized, address obsolescence, as well as improve readiness.

D. Acquisition Strategy

Culmen International, LLC has a proven methodology to develop computer models (digital twin) relevant to the thermal loading CAD/PAD items are subjected to. A contract will be awarded to Culmen International, LLC to develop a digital twin using their proprietary software, Tru Navigator. The Tru Navigator software will use as its input, key areas of degradation to CAD/PAD items (temperature, humidity, shock, vibration and thermal cycling) and its output will be the cumulative degradation to the CAD/PAD item. Additional technologies and associated vendors will also be evaluated as necessary.

All other efforts: procurement of CAD/PAD test items, test and evaluation and model validation will be sourced using competitive contracting strategies.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy **Date:** March 2024

| | | |
|--|--|--|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / Precision Strike Weapons Development Program | Project (Number/Name) 3411 / CAD/PAD Digital Twin Modeling |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Product Development | SS/CPIF | Culmen International : Alexandria, VA | 1.128 | 0.256 | Jun 2023 | 0.742 | Jun 2024 | 0.466 | Jun 2025 | - | | 0.466 | Continuing | Continuing | Continuing |
| Subtotal | | | 1.128 | 0.256 | | 0.742 | | 0.466 | | - | | 0.466 | Continuing | Continuing | N/A |

Remarks
FY 2025 Phase IV B contract supports compliance test efforts to support the software integration phase of the Digital Twin Modeling.

| Support (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Government Support | WR | NSWC : Indian Head | 0.385 | 0.084 | Feb 2023 | 0.086 | Dec 2023 | 0.085 | Oct 2024 | - | | 0.085 | Continuing | Continuing | Continuing |
| Subtotal | | | 0.385 | 0.084 | | 0.086 | | 0.085 | | - | | 0.085 | Continuing | Continuing | N/A |

| | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract | |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| Project Cost Totals | | 1.513 | 0.340 | 0.828 | 0.551 | - | 0.551 | Continuing | Continuing | N/A |

Remarks

| | | |
|--|---|---|
| Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3411 / <i>CAD/PAD Digital Twin Modeling</i> |

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CADPAD PROGRAM SCHEDULE PB25

| Fiscal Year | 2023 | | | | 2024 | | | | 2025 | | | | 2026 | | | | 2027 | | | | 2028 | | | | 2029 | | | |
|--|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| | 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 |
| Milestones | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Test & Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contract Awards | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prod. Test & Dev. Phase III | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prod. Test & Dev. Phase IV | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 3411 / <i>CAD/PAD Digital Twin Modeling</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>CAD/PAD Digital Twin Modeling</i> | | | | |
| Product Development: Contract Awards: FY 2023 Contract Award (Phase III A) | 3 | 2023 | 3 | 2023 |
| Product Development: Contract Awards: FY 2024 Contract Award (Phase III B) | 3 | 2024 | 3 | 2024 |
| Product Development: Contract Awards: FY 2024 Contract Award (Phase IV A) | 3 | 2024 | 3 | 2024 |
| Product Development: Contract Awards: FY 2025 Contract Award (Phase IV B) | 3 | 2025 | 3 | 2025 |
| Product Development: Product Test and Development Phase III: SW/HW Develop/Run/Test/ Implement/ License | 3 | 2023 | 1 | 2025 |
| Product Development: Product Test and Development Phase IV: Model Validation/ User Tests | 4 | 2024 | 4 | 2029 |

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy **Date:** March 2024

| | | |
|--|---|--|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 9999 / <i>Congressional Adds</i> |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | FY 2026 | FY 2027 | FY 2028 | FY 2029 | Cost To Complete | Total Cost |
|---------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 9999: <i>Congressional Adds</i> | 5.792 | 24.134 | 0.000 | 0.000 | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 29.926 |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

C762 - NEUTRON RADIOGRAPHY TECHNOLOGIES FOR ENERGETIC DEVICES

Neutron radiography (N-ray) is a critical nondestructive inspection technique used to complement X-ray. N-ray and X-ray are used to detect defects and proper assembly of a variety of energetics, including Cartridge and Propellant Actuated Devices (CAD/PADs). The US Navy intends to continue to employ neutron radiographic inspection to support energetics programs for the foreseeable future. Historically, nuclear reactors have been the only sources to perform high quality, high throughput neutron radiography. The energetics supply chain has been heavily reliant on a single commercial nuclear reactor that has been operating since the 1950s with closure imminent This congressional add allows research and development to provide a site survey and preparatory improvement of facilities to support a high energy ion accelerator capability.

*PHASE I of N-Ray Congressional Add is located under PE: 0605518N CONVENTIONAL PROMPT STRIKE (CPS).

C880: SLCM-N

This project will conduct system development and demonstration of nuclear-capable sea-launched cruise missile.

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

| | FY 2023 | FY 2024 |
|--|---------|---------|
| Congressional Add: SLCM-N | 24.134 | 0.000 |
| FY 2023 Accomplishments: Congressional add for Nuclear-Capable Sea-Launched Cruise Missile (SLCM-N). Funds will be used to refine SLCM-N parameters to enable any future acquisition decision. Conduct SLCM-N technology development and conduct SLCM-N systems engineering and technical evaluation efforts. | | |
| FY 2024 Plans: Funding provided in FY 2023 only. | | |
| Congressional Adds Subtotals | 24.134 | 0.000 |

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

N/A

Remarks

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| | | |
|---|---|--|
| Exhibit R-2A, RDT&E Project Justification: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / Precision Strike Weapons Development Program | Project (Number/Name) 9999 / Congressional Adds |

D. Acquisition Strategy

CAD/PAD JPO and NSWC IHD are performing site and facility assessments, developing requirements, and performing a safety analyses for an accelerator-based neutron radiography capability to be located at NSWC IHD other partner location. In parallel to the government work above, a contract is planned to award for engineering support to perform modeling and safety analyses to ensure the system is safe to operate in the Navy facility, as well as assist the Navy with any regulatory submittals required to own and operate the system. System component hardware procurement will be phased in once requirements are defined.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy **Date:** March 2024

| | | |
|--|---|--|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 9999 / <i>Congressional Adds</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Phase II Product Dev | WR | NSWC : Indian Head | 3.177 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 3.177 | - |
| Phase II Product Dev | TBD | Pheonix, LLC : Wisconsin | 2.600 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 2.600 | 2.600 |
| Subtotal | | | 5.777 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 5.777 | N/A |

Remarks
FY 2022 Congressional Add for Neutron radiographic inspection of cartridge and propellant.

| Support (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Phase II NAWCWD Support | WR | NAWCWD : CHINA LAKE | 0.015 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.015 | - |
| Subtotal | | | 0.015 | 0.000 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 0.015 | N/A |

| Test and Evaluation (\$ in Millions) | | | | FY 2023 | | FY 2024 | | FY 2025 Base | | FY 2025 OCO | | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | | | |
| Developmental Test & Evaluation (DT&E) | C/CPFF | JHU/APL : BALTIMORE, MD | 0.000 | 5.000 | Oct 2023 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 5.000 | - |
| Developmental Test & Evaluation (DT&E) | C/CPFF | TBD Platform Integration : TBD | 0.000 | 8.000 | Oct 2023 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 8.000 | - |
| Developmental Test & Evaluation (DT&E) | C/CPFF | TBD Airframe Integration : TBD | 0.000 | 4.000 | Oct 2023 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 4.000 | - |
| Developmental Test & Evaluation (DT&E) | C/CPFF | TBD Technology Maturation : TBD | 0.000 | 7.134 | Oct 2023 | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 7.134 | - |
| Subtotal | | | 0.000 | 24.134 | | 0.000 | | 0.000 | | - | | 0.000 | 0.000 | 24.134 | N/A |

Remarks
FY 2023 Congressional Add for Nuclear-Armed Sea-Launched Cruise Missile (SLCM-N).

UNCLASSIFIED

| | | | | | | | | | | | |
|---|--------------------|----------------|--|---------------------|--------------------|----------------------|---|-------------------|---------------------------------|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Navy | | | | | | | Date: March 2024 | | | | |
| Appropriation/Budget Activity 1319 / 4 | | | R-1 Program Element (Number/Name) PE 0604659N / Precision Strike Weapons Development Program | | | | Project (Number/Name) 9999 / Congressional Adds | | | | |
| | Prior Years | FY 2023 | FY 2024 | FY 2025 Base | FY 2025 OCO | FY 2025 Total | Cost To Complete | Total Cost | Target Value of Contract | | |
| Project Cost Totals | 5.792 | 24.134 | 0.000 | 0.000 | - | 0.000 | 0.000 | 29.926 | N/A | | |

Remarks

UNCLASSIFIED

| | | |
|--|---|--|
| Exhibit R-4, RDT&E Schedule Profile: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 9999 / <i>Congressional Adds</i> |

| FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | | FY 2029 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| CAD/PAD N-RAY Page/Group/Row | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Product Development: Contract Awards: PHEONIX, LLC CONTRACT | ████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Development: PHASE I NRE: Analysis | ████████████████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product Development: PHASE II MODEL SAFETY: PHASE II MODEL SAFETY | ████████████████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLCM-N | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SLCM-N System Development: SLCM-N System Development | ██ | | | | | | | | | | | | | | | | | | | | | | | | | | | |

UNCLASSIFIED

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|---|---|--|
| Exhibit R-4A, RDT&E Schedule Details: PB 2025 Navy | | Date: March 2024 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0604659N / <i>Precision Strike Weapons Development Program</i> | Project (Number/Name) 9999 / <i>Congressional Adds</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| CAD/PAD N-RAY Page/Group/Row | | | | |
| Product Development: Contract Awards: PHEONIX, LLC CONTRACT | 1 | 2023 | 1 | 2023 |
| Product Development: PHASE I NRE: Analysis | 1 | 2023 | 4 | 2023 |
| Product Development: PHASE II MODEL SAFETY: PHASE II MODEL SAFETY | 1 | 2023 | 4 | 2023 |
| SLCM-N | | | | |
| SLCM-N System Development: SLCM-N System Development | 1 | 2023 | 4 | 2024 |