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

| | |
|---|---|
| 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 0603609N / <i>Conventional Munitions</i> |
|---|---|

| COST (\$ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 256.569 | 8.917 | 9.877 | 7.296 | - | 7.296 | - | - | - | - | - | - |
| 0363: <i>Insensitive Munitions Adv. Development</i> | 255.711 | 7.424 | 7.753 | 7.296 | - | 7.296 | - | - | - | - | - | - |
| 3436: <i>AN/BST-1 Buoy Component Re-Design</i> | 0.858 | 1.493 | 2.124 | 0.000 | - | 0.000 | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

Proj 0363- Most Navy munitions react violently when exposed to unplanned stimuli such as fire, shock and bullet or fragment impact, thus presenting a great hazard to ships, aircraft, and personnel. The Insensitive Munitions Advanced Development (IMAD) program will provide, validate, and transition technology to all new weapon developments and priority weapon systems and enable production of munitions insensitive to these stimuli with no reduction in combat performance. Insensitive Munitions (IM) is the Navy's focused effort on propellants, propulsion units, explosives, warheads, fuses, and pyrotechnics to reduce the severity of cook-off and bullet/fragment impact reactions, minimizing the probability for sympathetic detonation, both in normal storage and in use, increasing ship and platform survivability and satisfying performance and readiness requirements.

Proj 3436- The AN/BST-1 Submarine Emergency Communication Transmitter informs Navy leadership when a ballistic missile submarine is in extremis. When activated, a buoy is released from the submarine, floats to the surface and transmits an emergency signal. The energetic components in the system release the buoy from the submarine, separate protective covers and actuate an antenna for communication. The AN/BST-1 Buoy energetic component re-design will replace two antenna related explosive components that utilize explosive formulations that are no longer produced due to environmental impact. The re-design will support future procurements for OHIO and COLUMBIA class deployments. The energetic component re-design includes design, prototyping, design verification testing, environmental qualification, hazard classification, insensitive munitions and developmental testing. The two re-designed energetic components will be qualified for USN use at the conclusion of the program.

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Navy | Date: May 2021 |
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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 0603609N / <i>Conventional Munitions</i> |
|---|---|

| B. Program Change Summary (\$ in Millions) | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 9.988 | 9.922 | 9.263 | - | 9.263 |
| Current President's Budget | 8.917 | 9.877 | 7.296 | - | 7.296 |
| Total Adjustments | -1.071 | -0.045 | -1.967 | - | -1.967 |
| • Congressional General Reductions | - | -0.045 | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | -0.680 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.391 | 0.000 | | | |
| • Program Adjustments | 0.000 | 0.000 | -1.853 | - | -1.853 |
| • Rate/Misc Adjustments | 0.000 | 0.000 | -0.114 | - | -0.114 |

Change Summary Explanation

FY2021 to FY2022 decrease due to funding higher Navy priorities and completion of Buoy re-design and qualification testing (-\$1.853M), as well as inflation/miscellaneous adjustments (-\$.114M).

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|--|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy | | | | | | | | | | Date: May 2021 | | |
| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | | | | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
| 0363: <i>Insensitive Munitions Adv. Development</i> | 255.711 | 7.424 | 7.753 | 7.296 | - | 7.296 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Energetic materials producibility is demonstrated to assure national capability to produce and load munitions systems. The program leverages are being closely coordinated with other military departments, North Atlantic Treaty Organization (NATO) and allied countries to eliminate redundant efforts and maximize efficiency. A joint service IM requirement has been developed and through the IM strategic planning process, all Program Executive Offices (PEO) are implementing IM in their priority munitions. IM are identified as a Department of Defense (DoD) critical technology requirement and considered as part of a weapon design. The IMAD program matures the technology developed by a variety of Science and Technology (S&T) sources for program management integration into weapons systems to meet the IM technical deficiencies documented in the PEO IM Strategic Plans. IMAD provides the link between S&T programs and the program managers (PM) by optimizing IM technologies to meet Navy requirements. IMAD offers risk mitigation for the PMs in terms of IM technical knowledge, expertise and manpower with the state of the art expertise across IM products. Each technology area is divided into subtasks addressing specific munition and munition class IM deficiencies.

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

| | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Insensitive Munitions Adv. Development | 7.424 | 7.753 | 7.296 | 0.000 | 7.296 |
| Articles: | - | - | - | - | - |
| Description: Validate and assess weapon systems plan of action and milestones for IM compliance. Review Insensitive Munitions Strategic Plan (IMSP) for Navy compile and analyze weapon system, energetic material and generic technology IM test data. Perform Threat Hazard Assessments (THAs). Perform analysis of energetic material properties logistic process. Review IM certification and waivers. Support Insensitive Munitions Council (IMC), Insensitive Munitions Coordination Group (IMCG), and IMC Working Group. Support and develop Insensitive Munitions Technology Tool (IMT2). Support North Atlantic Treaty Organization Standardization Agreement (NATO STANAG) and Advanced Operations (AOP) development. Support IMAD program briefs. Support all Navy Joint Services Insensitive Munitions Technical Panel (JSIMTP) meetings. Support Explosive Safety Working Group (ESWG) meetings. Provide task management support for financial management, review of programmatic deliverables and overall task coordination. | | | | | |
| FY 2021 Plans: Evaluate and demonstrate improved solid propellant for Insensitive Munitions (IM) compliant rocket motor systems and container cook off mitigation. Evaluate and demonstrate new rocket motor case technology that | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |

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

| | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>can significantly reduce reaction violence of missile and rocket propulsion systems exposed to unplanned stimuli. Develop, demonstrate, and qualify new rocket propellant formulations that meet and/or improve system performance for air launched weapons and meet and/or improve IM goals. Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology. Investigate distribute fiber optic sensing for in-situ propellant health monitoring. Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant. Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5" Gun. Evaluate new ordnance and container concepts. Qualify next generation area attack weapon fragment impact evaluation. Evaluation of IM improvement of high density reactive material. Evaluate and demonstrate shape memory alloy rock splitting technology for case venting. Demonstrate effects of slow heating munitions test heating rate changes. Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology. Evaluation, demonstration, and qualification of new explosives that reduce collateral damage when bombs are exposed to thermal and impact threats. Develop and demonstrate new and improved stowage and container materials that achieve compliance with IM criteria while significantly reducing the logistics footprint by lowering system weight. Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions. Develop and demonstrate new and improved explosive initiation systems that improve IM and reliably initiate IM explosives. Evaluate qualification potential of explosives using new resonant acoustic mixing (RAM) of explosive ingredients. Develop and demonstrate new and improved explosive initiation systems that improve IM and reliably initiate IM explosives. Evaluate qualification potential of explosives using new resonant acoustic mixing (RAM) of explosive ingredients.</p> <p>FY 2022 Base Plans: Evaluate and demonstrate improved solid propellant for Insensitive Munitions (IM) compliant rocket motor systems and container cook off mitigation. Evaluate and demonstrate new rocket motor case technology that can significantly reduce reaction violence of missile and rocket propulsion systems exposed to unplanned stimuli. Develop, demonstrate, and qualify new rocket propellant formulations that meet and/or improve system performance for air launched weapons and meet and/or improve IM goals. Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology. Investigate distribute fiber optic sensing for in-situ propellant health monitoring. Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant. Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5" Gun. Evaluate new ordnance and container concepts. Investigate and evaluation of next generation area attack weapon slow heating concepts. Evaluate and demonstrate shape memory alloy rock splitting technology for case venting. Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology. Evaluation, demonstration, and qualification of new explosives that reduce collateral damage when bombs are exposed</p> | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |

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

| | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| to thermal and impact threats. Develop and demonstrate new and improved stowage and container materials that achieve compliance with IM criteria while significantly reducing the logistics footprint by lowering system weight. Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions. Characterize new and improved IM explosives with large critical diameters that improve IM and enhance performance. Navy qualification of PBXN-110 and PBXN-112 explosives using new resonant acoustic mixing (RAM). | | | | | |
| <i>FY 2022 OCO Plans:</i> N/A | | | | | |
| <i>FY 2021 to FY 2022 Increase/Decrease Statement:</i> FY22 Decrease of 0.378 due to funding higher Navy priorities. | | | | | |
| Accomplishments/Planned Programs Subtotals | 7.424 | 7.753 | 7.296 | 0.000 | 7.296 |

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

N/A

Remarks

D. Acquisition Strategy

IMAD is assigned as a non-ACAT program and therefore does not have program milestones like the ACAT I to IV programs. IMAD develops and evaluates IM technologies for use in Navy weapon systems and is not part of a particular weapon acquisition program

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Navy | | | | | | | | | | | | Date: May 2021 | | | |
|--|------------------------|--------------------------------|-------------|--------------------------------------|------------|---------|------------|---|------------|-------------|------------|----------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity | | | | R-1 Program Element (Number/Name) | | | | Project (Number/Name) | | | | | | | |
| 1319 / 4 | | | | PE 0603609N / Conventional Munitions | | | | 0363 / Insensitive Munitions Adv. Development | | | | | | | |
| Product Development (\$ in Millions) | | | | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 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 |
| PROPULSION DEV. AND EVAL. | WR | NAWC DIV/CHINA LAKE : CA | 109.139 | 2.363 | Nov 2019 | 3.020 | Nov 2020 | 2.320 | Nov 2021 | - | | 2.320 | - | - | - |
| EXPLOSIVES DEV. AND EVAL. | WR | NSWC/INDIAN HEAD DIV. : MD | 90.533 | 2.022 | Nov 2019 | 1.640 | Nov 2020 | 1.985 | Nov 2021 | - | | 1.985 | - | - | - |
| ORDNANCE DEV. AND EVAL. | WR | NSWC/DAHLGREN : VA | 29.634 | 1.025 | Nov 2019 | 1.052 | Nov 2020 | 1.008 | Nov 2021 | - | | 1.008 | - | - | - |
| GUN PROPULSION AND EVAL. | WR | NSWC/INDIAN HEAD DIV. : MD | 12.977 | 1.015 | Nov 2019 | 1.042 | Nov 2020 | 0.984 | Nov 2021 | - | | 0.984 | - | - | - |
| Subtotal | | | 242.283 | 6.425 | | 6.754 | | 6.297 | | - | | 6.297 | - | - | N/A |
| Management Services (\$ in Millions) | | | | FY 2020 | | FY 2021 | | FY 2022 Base | | FY 2022 OCO | | FY 2022 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 SUPT | WR | NOSSA : IN HEAD MD | 6.751 | 0.209 | Nov 2019 | 0.209 | Nov 2020 | 0.209 | Nov 2021 | - | | 0.209 | - | - | - |
| PROGRAM MANAGEMENT SUPPORT | MIPR | DTIC : FT BELVOIR VA | 6.677 | 0.790 | Nov 2019 | 0.790 | Nov 2020 | 0.790 | Nov 2021 | - | | 0.790 | - | - | - |
| Subtotal | | | 13.428 | 0.999 | | 0.999 | | 0.999 | | - | | 0.999 | - | - | N/A |
| Project Cost Totals | | | 255.711 | 7.424 | | 7.753 | | 7.296 | | - | | 7.296 | - | - | N/A |
| Remarks | | | | | | | | | | | | | | | |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |

| | FY20 | | | | FY21 | | | | FY22 | | | | FY23 | | | | FY24 | | | | FY25 | | | | FY26 | | | |
|--|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| | 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 |
| Proj 0363 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AIM-9X Risk Reduction — AUR TIVS SCO Mitigation Complete | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Non-Explosive Thermite Linear Case Cutting Charges for AIM-9X Cook-off Mitigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mitigation of IM Responses in an Advanced Anti-Radiation Guided Missile Rocket Motor | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21 inch DIA Highly Loaded Grain Rocket Motor IM Assessment and Mitigation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluate and demonstrate improved solid propellant for IM compliant rocket motor systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluate and demonstrate new rocket motor case technology to reduce reaction violence of missile and rocket propulsion systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop, demonstrate, and qualify new rocket propellant formulations that meet and/or improve IM goals | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Investigate distribute fiber optic sensing for in-situ propellant health monitoring. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5 inch Gun. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluate new ordnance and container concepts. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Investigate and evaluation of next generation area attack weapon slow heating concepts. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |

| | FY20 | | | | FY21 | | | | FY22 | | | | FY23 | | | | FY24 | | | | FY25 | | | | FY26 | | | |
|--|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|------|---|---|---|
| | 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 |
| Evaluate and demonstrate shape memory alloy rock splitting technology for case venting. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation, demonstration, and qualification of new explosives that reduce collateral damage | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and demonstrate new and improved stowage and container materials that achieve compliance with IM criteria | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Characterize new and improved IM explosives with large critical diameters that improve IM and enhance performance | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 0363 | | | | |
| AIM-9X Risk Reduction / AUR TIVS SCO Mitigation | 1 | 2020 | 2 | 2021 |
| Non-Explosive Thermite Linear Case Cutting Charges for AIM-9X Cook-off Mitigation | 1 | 2020 | 2 | 2021 |
| Mitigation of IM Responses in an Advanced Anti-Radiation Guided Missile Rocket Motor | 1 | 2020 | 2 | 2021 |
| 21 inch DIA Highly Loaded Grain Rocket Motor IM Assessment and Mitigation | 1 | 2020 | 2 | 2021 |
| Evaluate and demonstrate improved solid propellant for IM compliant rocket motor systems | 1 | 2020 | 4 | 2022 |
| Evaluate and demonstrate new rocket motor case technology to reduce reaction violence of missile and rocket propulsion systems | 1 | 2020 | 4 | 2022 |
| Develop, demonstrate, and qualify new rocket propellant formulations that meet and/or improve IM goals | 1 | 2020 | 4 | 2022 |
| Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology | 1 | 2020 | 4 | 2022 |
| Investigate distribute fiber optic sensing for in-situ propellant health monitoring | 1 | 2020 | 4 | 2022 |
| Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant | 2 | 2020 | 4 | 2022 |
| Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5 inch Gun | 1 | 2020 | 4 | 2022 |
| Evaluate new ordnance and container concepts | 1 | 2020 | 4 | 2022 |
| Investigate and evaluation of next generation area attack weapon slow heating concepts | 1 | 2020 | 4 | 2022 |
| Evaluate and demonstrate shape memory alloy rock splitting technology for case venting | 1 | 2020 | 4 | 2022 |
| Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology | 1 | 2020 | 4 | 2022 |

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

| | | |
|--|---|--|
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 0363 / <i>Insensitive Munitions Adv. Development</i> |
|--|---|--|

| Events by Sub Project | Start | | End | |
|--|----------------|-------------|----------------|-------------|
| | Quarter | Year | Quarter | Year |
| Evaluation, demonstration, and qualification of new explosives that reduce collateral damage | 2 | 2020 | 4 | 2022 |
| Develop and demonstrate new and improved stowage and container materials that achieve compliance with IM criteria | 1 | 2020 | 4 | 2022 |
| Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions | 1 | 2020 | 4 | 2022 |
| Characterize new and improved IM explosives with large critical diameters that improve IM and enhance performance | 1 | 2020 | 4 | 2022 |

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| Appropriation/Budget Activity 1319 / 4 | | | | | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | | | | Project (Number/Name) 3436 / <i>AN/BST-1 Buoy Component Re-Design</i> | | | |
|--|-------------|---------|---------|--------------|---|---------------|---------|---------|---|---------|------------------|------------|
| COST (\$ in Millions) | Prior Years | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total | FY 2023 | FY 2024 | FY 2025 | FY 2026 | Cost To Complete | Total Cost |
| 3436: <i>AN/BST-1 Buoy Component Re-Design</i> | 0.858 | 1.493 | 2.124 | 0.000 | - | 0.000 | - | - | - | - | - | - |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The AN/BST-1 Submarine Emergency Communication Transmitter informs Navy leadership when a ballistic missile submarine is in extremis. When activated, a buoy is released from the submarine, floats to the surface and transmits an emergency signal. The energetic components in the system release the buoy from the submarine, separate protective covers and actuate an antenna for communication. The AN/BST-1 Buoy energetic component re-design will replace two antenna related explosive components that utilize explosive formulations that are no longer produced due to environmental impact. The re-design will support future procurements for OHIO and COLUMBIA class deployments. The energetic component re-design includes design, prototyping, design verification testing, environmental qualification, hazard classification, insensitive munitions and developmental testing. The two re-designed energetic components will be qualified for Navy use at the conclusion of the program.

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

| | FY 2020 | FY 2021 | FY 2022 Base | FY 2022 OCO | FY 2022 Total |
|--|---------|---------|--------------|-------------|---------------|
| Title: Systems Engineering and Testing | 1.493 | 2.124 | 0.000 | 0.000 | 0.000 |
| Articles: | - | - | - | - | - |
| FY 2021 Plans: -Conduct qualification hardware build. -Conduct hazard classification testing. -Conduct qualification testing. | | | | | |
| FY 2022 Base Plans: N/A | | | | | |
| FY 2022 OCO Plans: N/A | | | | | |
| FY 2021 to FY 2022 Increase/Decrease Statement: FY2021 to FY2022 decrease due to completion of Buoy re-design and qualification testing. | | | | | |
| Accomplishments/Planned Programs Subtotals | 1.493 | 2.124 | 0.000 | 0.000 | 0.000 |

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

N/A

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| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 3436 / <i>AN/BST-1 Buoy Component Re-Design</i> |

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

Remarks

D. Acquisition Strategy

The AN/BST-1 Buoy energetic component re-design will be directed by government activities teaming with industry for design and production support. The re-designed components will be qualified for Navy use in FY2022.

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| Exhibit R-4, RDT&E Schedule Profile: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 3436 / <i>AN/BST-1 Buoy Component Re-Design</i> |

| | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Proj 3436 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Design Drawings/Specifications | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Prototype Build/Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procure Long Lead Hardware | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Build Design Verification Test Units | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conduct Design Verification Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Build Qualification Hardware | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Environmental Qualification Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| System Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hazard Classification/Insensitive Munitions Testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

UNCLASSIFIED

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|---|---|---|
| Exhibit R-4A, RDT&E Schedule Details: PB 2022 Navy | | Date: May 2021 |
| Appropriation/Budget Activity 1319 / 4 | R-1 Program Element (Number/Name) PE 0603609N / <i>Conventional Munitions</i> | Project (Number/Name) 3436 / <i>AN/BST-1 Buoy Component Re-Design</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Proj 3436 | | | | |
| Design Drawings/Specifications | 2 | 2020 | 2 | 2021 |
| Prototype Build/Testing | 2 | 2020 | 4 | 2020 |
| Procure Long Lead Hardware | 2 | 2020 | 3 | 2020 |
| Build Design Verification Test Units | 3 | 2020 | 1 | 2021 |
| Conduct Design Verification Testing | 1 | 2020 | 3 | 2021 |
| Build Qualification Hardware | 4 | 2021 | 1 | 2022 |
| Environmental Qualification Testing | 1 | 2022 | 3 | 2022 |
| System Testing | 4 | 2022 | 4 | 2022 |
| Hazard Classification/Insensitive Munitions Testing | 4 | 2022 | 4 | 2022 |