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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2020 Navy **Date:** March 2019

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>
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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	238.753	13.699	9.307	9.988	-	9.988	10.761	8.768	8.941	9.119	Continuing	Continuing
0363: <i>Insensitive Munitions Adv. Development</i>	238.753	8.874	8.414	8.434	-	8.434	8.628	8.768	8.941	9.119	Continuing	Continuing
3436: <i>AN/BST-1 Buoy Component Re-Design</i>	0.000	0.000	0.893	1.554	-	1.554	2.133	0.000	0.000	0.000	0.000	4.580
9999: <i>Congressional Adds</i>	0.000	4.825	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.825

**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 2020 Navy** **Date:** March 2019

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Previous President's Budget	8.909	9.307	9.988	-	9.988
Current President's Budget	13.699	9.307	9.988	-	9.988
Total Adjustments	4.790	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.209	0.000			
• Rate/Misc Adjustments	-0.001	0.000	0.000	-	0.000
• Congressional Add Adjustments	5.000	-	-	-	-

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

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

Congressional Add: *Energetics Technology Research*

Congressional Add Subtotals for Project: 9999

Congressional Add Totals for all Projects

	<b>FY 2018</b>	<b>FY 2019</b>
	4.825	0.000
	4.825	0.000
	4.825	0.000

**Change Summary Explanation**

The FY 2019 funding request was reduced by \$0.051 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy										<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>				<b>Project (Number/Name)</b> 0363 / <i>Insensitive Munitions Adv. Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
0363: <i>Insensitive Munitions Adv. Development</i>	238.753	8.874	8.414	8.434	-	8.434	8.628	8.768	8.941	9.119	Continuing	Continuing
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)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Title:</b> Insensitive Munitions Adv. Development	8.874	8.414	8.434	0.000	8.434
<b>Articles:</b>	-	-	-	-	-
<b>Description:</b> 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.					
<b>FY 2019 Plans:</b> Evaluate and demonstrate improved solid propellant for Insensitive Munitions (IM) compliant rocket motor systems and container cook off migration. Evaluate and demonstrate new rocket motor case technology that					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 0363 / <i>Insensitive Munitions Adv. Development</i>

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

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<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. Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant. Evaluate new ordnance and container concepts. Qualify next generation area attack weapon fragment impact evaluation. Evaluate Slow Heating Oven Designs. 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 new sensors that will detect and indicate thermal events real time. The sensor can provide warning signal and be capable to initiate venting systems. 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.</p> <p>Develop and demonstrate new and improved explosive initiation systems that improve IM and reliably initiate IM explosives.</p> <p>Evaluate qualification potential of explosives using new resonant acoustic mixing (RAM) of explosive ingredients.</p> <p><b>FY 2020 Base Plans:</b></p> <p>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. 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</p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 0363 / <i>Insensitive Munitions Adv. Development</i>

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

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<p>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><b>FY 2020 OCO Plans:</b> N/A</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding change is insignificant.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	8.874	8.414	8.434	0.000	8.434

**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

**E. Performance Metrics**

Quarterly program reviews

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy												Date: March 2019			
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 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
PROPULSION DEV. AND EVAL.	WR	NAWC DIV/CHINA LAKE : CA	102.752	3.400	Nov 2017	3.373	Nov 2018	3.373	Nov 2019	-		3.373	Continuing	Continuing	Continuing
EXPLOSIVES DEV. AND EVAL.	WR	NSWC/INDIAN HEAD DIV. : MD	86.382	2.149	Nov 2017	2.002	Nov 2018	2.022	Nov 2019	-		2.022	Continuing	Continuing	Continuing
ORDNANCE DEV. AND EVAL.	WR	NSWC/DAHLGREN : VA	27.449	1.160	Nov 2017	1.025	Nov 2018	1.025	Nov 2019	-		1.025	Continuing	Continuing	Continuing
GUN PROPULSION AND EVAL.	WR	NSWC/INDIAN HEAD DIV. : MD	10.707	1.255	Nov 2017	1.015	Nov 2018	1.015	Nov 2019	-		1.015	Continuing	Continuing	Continuing
<b>Subtotal</b>			227.290	7.964		7.415		7.435		-		7.435	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 SUPT	WR	NOSSA : IN HEAD MD	6.296	0.190	Nov 2017	0.209	Nov 2018	0.209	Nov 2019	-		0.209	Continuing	Continuing	Continuing
PROGRAM MANAGEMENT SUPPORT	MIPR	DTIC : FT BELVOIR VA	5.167	0.720	Nov 2017	0.790	Nov 2018	0.790	Nov 2019	-		0.790	Continuing	Continuing	Continuing
<b>Subtotal</b>			11.463	0.910		0.999		0.999		-		0.999	Continuing	Continuing	N/A
<b>Project Cost Totals</b>			238.753	8.874		8.414		8.434		-		8.434	Continuing	Continuing	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 0363 / <i>Insensitive Munitions Adv. Development</i>

FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
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

<b>Proj 0363</b>	
Insensitive Munitions Adv. Development: TBD	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 0363 / <i>Insensitive Munitions Adv. Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 0363</b>				
Insensitive Munitions Adv. Development: TBD	1	2018	1	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy										<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>				<b>Project (Number/Name)</b> 3436 / <i>AN/BST-1 Buoy Component Re-Design</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
3436: <i>AN/BST-1 Buoy Component Re-Design</i>	0.000	0.000	0.893	1.554	-	1.554	2.133	0.000	0.000	0.000	0.000	4.580
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)**

	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Title:</b> Systems Engineering and Testing	0.000	0.893	1.554	0.000	1.554
<b>Articles:</b>	-	-	-	-	-
<b>FY 2019 Plans:</b>					
-Develop contract statement of work.					
-Conduct design analysis and specification review.					
-Develop design feasibility test plan.					
-Build prototypes for design feasibility testing.					
<b>FY 2020 Base Plans:</b>					
-Complete design feasibility testing.					
-Conduct preliminary design review.					
-Procure long lead materials.					
-Build design verification test units.					
-Conduct design verification testing.					
<b>FY 2020 OCO Plans:</b>					
N/A					
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 3436 / <i>AN/BST-1 Buoy Component Re-Design</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
FY20 increase due to increased hardware quantity and testing planned for design verification test units in FY 2020.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.893	1.554	0.000	1.554

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

N/A

**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.

**E. Performance Metrics**

Quarterly Program Reviews and semi-annual Design Reviews.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2020 Navy</b>												<b>Date: March 2019</b>			
<b>Appropriation/Budget Activity</b> 1319 / 4						<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>				<b>Project (Number/Name)</b> 3436 / <i>AN/BST-1 Buoy Component Re-Design</i>					
<b>Product Development (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Produce Drawings, Prototypes and Test	MIPR	DOTC : Picatinny, NJ	0.000	0.000		0.586	Mar 2019	1.144	Mar 2020	-		1.144	3.200	4.930	4.400
<b>Subtotal</b>			0.000	0.000		0.586		1.144		-		1.144	3.200	4.930	N/A
<b>Support (\$ in Millions)</b>				<b>FY 2018</b>		<b>FY 2019</b>		<b>FY 2020 Base</b>		<b>FY 2020 OCO</b>		<b>FY 2020 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Government Engineering Services	WR	NSWC, IHEODTD : Indian Head, MD	0.000	0.000		0.252	Nov 2018	0.360	Oct 2019	-		0.360	0.500	1.112	-
Government Engineering Services	WR	NSWC, Crane : Crane, IN	0.000	0.000		0.055	Nov 2018	0.050	Oct 2019	-		0.050	0.100	0.205	-
<b>Subtotal</b>			0.000	0.000		0.307		0.410		-		0.410	0.600	1.317	N/A
<b>Project Cost Totals</b>			0.000	0.000		0.893		1.554		-		1.554	3.800	6.247	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2020 Navy</b>		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 3436 / <i>AN/BST-1 Buoy Component Re-Design</i>

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
<b>Proj 3436</b>																												
Update performance specification award Contract for Prototype/Design/Qualification																												
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																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2020 Navy		<b>Date:</b> March 2019
<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 3436 / <i>AN/BST-1 Buoy Component Re-Design</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 3436</b>				
Update performance specification award Contract for Prototype/Design/Qualification	1	2019	2	2019
Design Drawings/Specifications	2	2019	4	2019
Prototype Build/Testing	3	2019	1	2020
Procure Long Lead Hardware	1	2020	2	2020
Build Design Verification Test Units	3	2020	3	2020
Conduct Design Verification Testing	4	2020	1	2021
Build Qualification Hardware	1	2021	3	2021
Environmental Qualification Testing	3	2021	4	2021
System Testing	4	2021	4	2021
Hazard Classification/Insensitive Munitions Testing	4	2021	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2020 Navy										<b>Date:</b> March 2019		
<b>Appropriation/Budget Activity</b> 1319 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>				<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
9999: <i>Congressional Adds</i>	0.000	4.825	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.825
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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

The Congressional add funding will be used to fund additional research for the Insensitive Munitions Advanced Development (IMAD) program for propulsion and ordnance projects in Maryland (MD), Virginia (VA) and California (CA). 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.

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

	<b>FY 2018</b>	<b>FY 2019</b>
<b>Congressional Add:</b> Energetics Technology Research	4.825	0.000
<b>FY 2018 Accomplishments:</b> The Congressional add funding will be used to fund additional research for the Insensitive Munitions Advanced Development (IMAD) program for propulsion and ordnance projects in MD, VA and CA.		
<b>FY 2019 Plans:</b> N/A		
<b>Congressional Adds Subtotals</b>	4.825	0.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A

**E. Performance Metrics**

Performance is level of effort for development.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2020 Navy** **Date:** March 2019

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
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FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
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

<b>Proj 9999</b>	
Insensitive Munitions Adv. Development: TBD	[REDACTED]

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2020 Navy **Date:** March 2019

<b>Appropriation/Budget Activity</b> 1319 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0603609N / <i>Conventional Munitions</i>	<b>Project (Number/Name)</b> 9999 / <i>Congressional Adds</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Proj 9999</i></b>				
Insensitive Munitions Adv. Development: TBD	3	2018	4	2020