Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy											Date: April 2022	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*					R-1 Program Element (Number/Name) PE 0603609N *I Conventional Munitions*							
COST ($ in Millions)	**Prior Years**	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**	**FY 2024**	**FY 2025**	**FY 2026**	**FY 2027**	**Cost To Complete**	**Total Cost**
Total Program Element	265.486	9.505	7.296	9.286	-	9.286	9.096	7.270	7.425	7.474	Continuing	Continuing
0363: *Insensitive Munitions Adv. Development*	263.135	7.450	7.296	9.286	-	9.286	9.096	7.270	7.425	7.474	Continuing	Continuing
3436: *AN/BST-1 Buoy Component Re-Design*	2.351	2.055	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.406

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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Navy					Date: April 2022
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 4: *Advanced Component Development & Prototypes (ACD&P)*		R-1 Program Element (Number/Name) PE 0603609N *I Conventional Munitions*			
B. Program Change Summary ($ in Millions)	**FY 2021**	**FY 2022**	**FY 2023 Base**	**FY 2023 OCO**	**FY 2023 Total**
Previous President's Budget	9.877	7.296	0.000	-	0.000
Current President's Budget	9.505	7.296	9.286	-	9.286
Total Adjustments	-0.372	0.000	9.286	-	9.286
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.372	0.000			
• Rate/Misc Adjustments	0.000	0.000	0.000	-	0.000
• Adjustments to Budget Year	-	-	9.286	-	9.286

Change Summary Explanation

FY 2023 funding increase reflects the fact that the FY 2022 President’s Budget request did not include out-year funding.

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603609N / *Conventional Munitions*	Project (Number/Name) 0363 / *Insensitive Munitions Adv. Development*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
0363: *Insensitive Munitions Adv. Development*	263.135	7.450	7.296	9.286	-	9.286	9.096	7.270	7.425	7.474	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)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Insensitive Munitions Adv. Development	7.450	7.296	9.286	0.000	9.286
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 2022 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					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
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 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).					
FY 2023 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 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					

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
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). ***FY 2023 OCO Plans:*** N/A ***FY 2022 to FY 2023 Increase/Decrease Statement:*** Funding increases from FY22 to FY23 due to a backlog is projects as a result of the 2019 Earthquake at China Lake, the Manufacturing Recertification at Indian Head, and Covid-19 slowdowns. These issues have largely been resolved. This will allow for increased rates of expenditures by allowing the testing at China Lake and mixing at Indian Head to accelerate and get the IMAD Program back on track to reduce the impact of these extenuating circumstances. Listed below are the Projects that will be funded in FY23 as a result of the backlog: Evaluate and Demonstrate Additively Manufactured High Order Fractal Foam Insulations for Reduced Propellant Ignition from Impact and Shock Develop, Evaluate and Demonstrate High Energy Insensitive Medium Caliber Gun Propellant Formulations Develop, Evaluate and Demonstrate Nitinol/Ceramic Band to Cut Rocket Missile Casing for Slow Cook off Mitigation Evaluate and Demonstrate IM Response of High Energy Density Fuel for Gas Turbine Powered Missile Systems Maturation of test methods across Navy Labs for performance characterization in accordance with AOP-7 Evaluate and Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology Evaluate and Demonstrate Passive cooling via hydrogel injection for energetic weapons systems					
Accomplishments/Planned Programs Subtotals	7.450	7.296	9.286	0.000	9.286

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

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603609N / *Conventional Munitions*	Project (Number/Name) 0363 / *Insensitive Munitions Adv. Development*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PROPULSION DEV. AND EVAL.	WR	NAWC DIV/CHINA LAKE : CA	111.502	3.380	Nov 2020	2.553	Nov 2021	3.288	Nov 2022	-		3.288	Continuing	Continuing	Continuing
EXPLOSIVES DEV. AND EVAL.	WR	NSWC/INDIAN HEAD DIV. : MD	92.555	2.276	Nov 2020	2.490	Nov 2021	2.228	Nov 2022	-		2.228	Continuing	Continuing	Continuing
ORDNANCE DEV. AND EVAL.	WR	NSWC/DAHLGREN : VA	30.659	0.647	Nov 2020	0.737	Nov 2021	1.265	Nov 2022	-		1.265	Continuing	Continuing	Continuing
GUN PROPULSION AND EVAL.	WR	NSWC/INDIAN HEAD DIV. : MD	13.992	0.539	Nov 2020	0.643	Nov 2021	1.245	Nov 2022	-		1.245	Continuing	Continuing	Continuing
		Subtotal	248.708	6.842		6.423		8.026		-		8.026	Continuing	Continuing	N/A

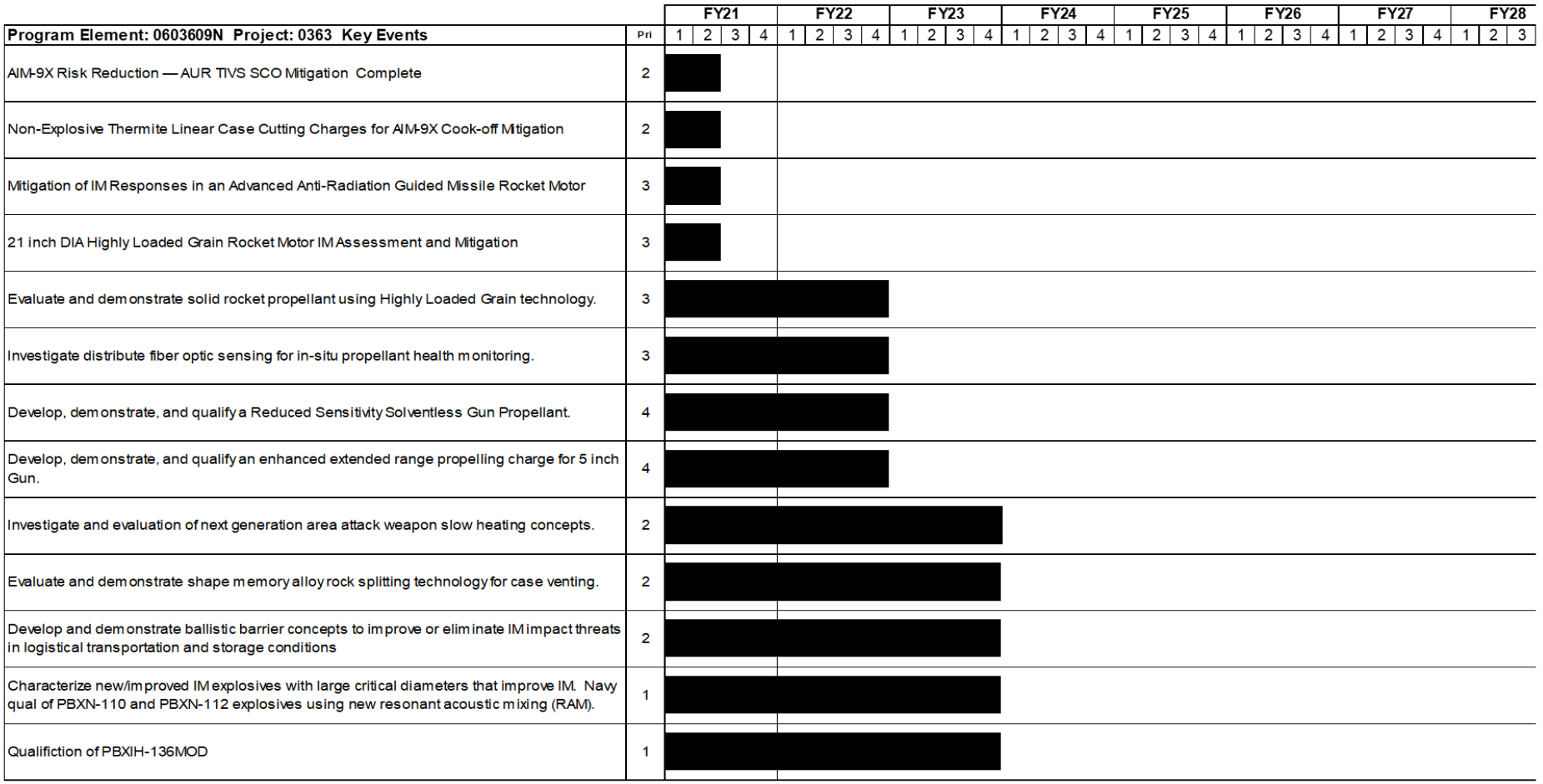
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
PROGRAM MANAGEMENT SUPT	WR	NOSSA : IN HEAD MD	6.960	0.215	Nov 2020	0.297	Nov 2021	0.263	Nov 2022	-		0.263	Continuing	Continuing	Continuing
PROGRAM MANAGEMENT SUPPORT	MIPR	DTIC : FT BELVOIR VA	7.467	0.393	Nov 2020	0.576	Nov 2021	0.997	Nov 2022	-		0.997	Continuing	Continuing	Continuing
		Subtotal	14.427	0.608		0.873		1.260		-		1.260	Continuing	Continuing	N/A

	Prior Years	FY 2021		FY 2022		FY 2023 Base		FY 2023 OCO		FY 2023 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	263.135	7.450		7.296		9.286		-		9.286	Continuing	Continuing	N/A

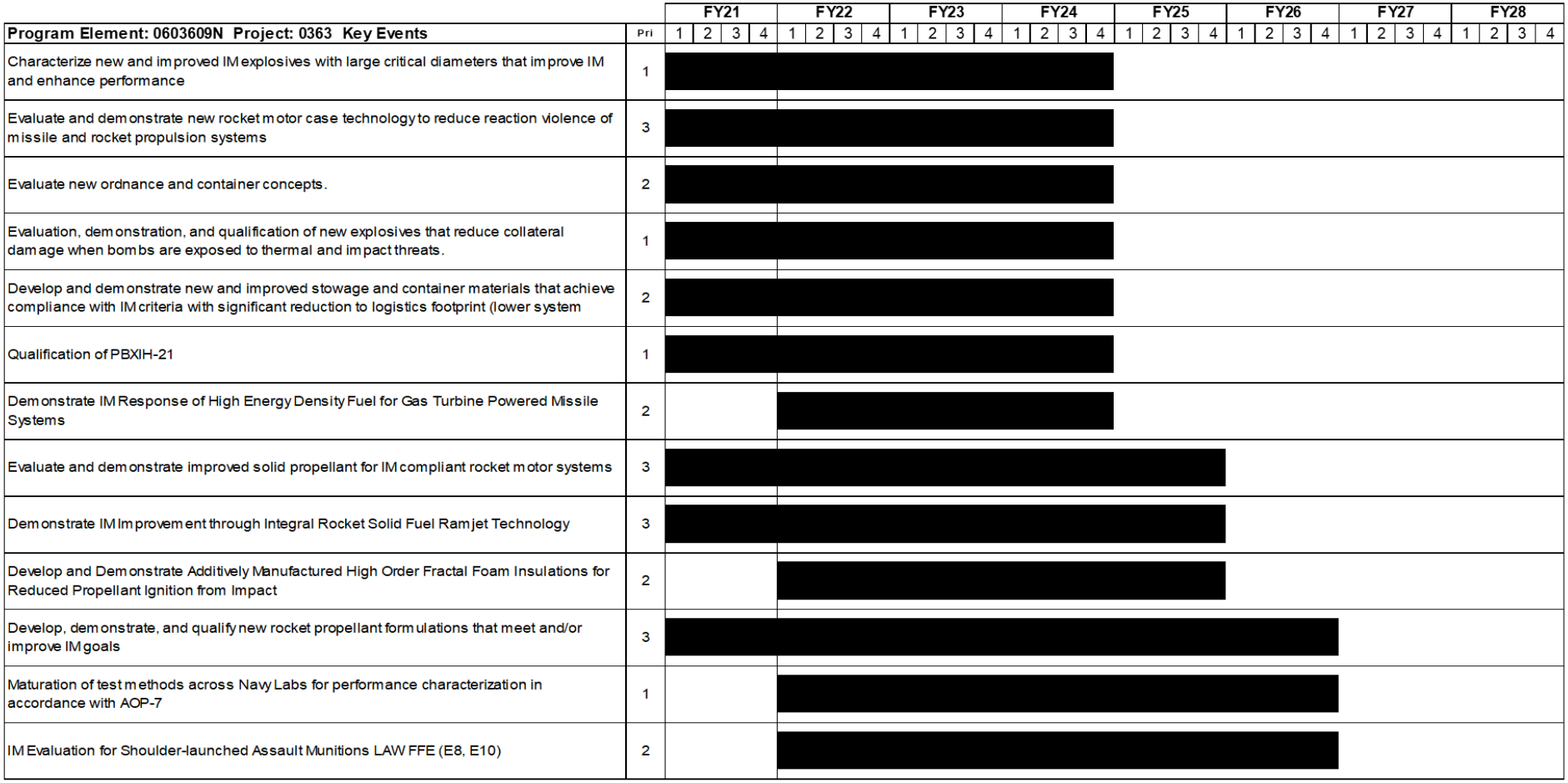
Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*



Program Element: 0603609N Project: 0363 Key Events	Pri	FY21				FY22				FY23				FY24				FY25				FY26				FY27				FY28		
		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	1	2	3
AIM-9X Risk Reduction — AUR TIVS SCO Mitigation Complete	2																															
Non-Explosive Thermite Linear Case Cutting Charges for AIM-9X Cook-off Mitigation	2																															
Mitigation of IM Responses in an Advanced Anti-Radiation Guided Missile Rocket Motor	3																															
21 inch DIA Highly Loaded Grain Rocket Motor IM Assessment and Mitigation	3																															
Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology.	3																															
Investigate distribute fiber optic sensing for in-situ propellant health monitoring.	3																															
Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant.	4																															
Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5 inch Gun.	4																															
Investigate and evaluation of next generation area attack weapon slow heating concepts.	2																															
Evaluate and demonstrate shape memory alloy rock splitting technology for case venting.	2																															
Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions	2																															
Characterize new/improved IM explosives with large critical diameters that improve IM. Navy qual of PBXN-110 and PBXN-112 explosives using new resonant acoustic mixing (RAM).	1																															
Qualifiction of PBXIH-136MOD	1																															

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*



Program Element: 0603609N Project: 0363 Key Events	Pri	FY21				FY22				FY23				FY24				FY25				FY26				FY27				FY28			
		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	1	2	3	4
Characterize new and improved IM explosives with large critical diameters that improve IM and enhance performance	1																																
Evaluate and demonstrate new rocket motor case technology to reduce reaction violence of missile and rocket propulsion systems	3																																
Evaluate new ordnance and container concepts.	2																																
Evaluation, demonstration, and qualification of new explosives that reduce collateral damage when bombs are exposed to thermal and impact threats.	1																																
Develop and demonstrate new and improved stowage and container materials that achieve compliance with IM criteria with significant reduction to logistics footprint (lower system	2																																
Qualification of PBXIH-21	1																																
Demonstrate IM Response of High Energy Density Fuel for Gas Turbine Powered Missile Systems	2																																
Evaluate and demonstrate improved solid propellant for IM compliant rocket motor systems	3																																
Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology	3																																
Develop and Demonstrate Additively Manufactured High Order Fractal Foam Insulations for Reduced Propellant Ignition from Impact	2																																
Develop, demonstrate, and qualify new rocket propellant formulations that meet and/or improve IM goals	3																																
Maturation of test methods across Navy Labs for performance characterization in accordance with AOP-7	1																																
IM Evaluation for Shoulder-launched Assault Munitions LAW FFE (E8, E10)	2																																

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

Program Element: 0603609N Project: 0363 Key Events	Pri	FY21				FY22				FY23				FY24				FY25				FY26				FY27				FY28			
		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	1	2	3	4
Evaluate and Demonstrate High Energy Insensitive Medium Caliber Gun Propellant Formulations	4					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Evaluate Nitinol/Ceramic Band to Cut Missile Casing for Slow Cookoff Mitigation	1					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■								
Develop, characterize, qualify and transition new explosives that have superior vulnerability characteristice, enhanced performance, comparable or lower manufacturing costs	1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	▒	▒	▒	▒	▒	▒	▒	▒
Maintenance of SW010-AG-ORD-010 Navy Qualification of Energetics	1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	▒	▒	▒	▒	▒	▒	▒	▒
Develop/Demonstrate Ordnance Technologies including warhead, fuze & component/system level protection systems	2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	▒	▒	▒	▒	▒	▒	▒	▒
Demonstrate innovative IM Technologies applied to weapon system propulsion	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	▒	▒	▒	▒	▒	▒	▒	▒
Develop and Demonstrate Gun Propulsion Technology for DON applications	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	▒	▒	▒	▒	▒	▒	▒	▒

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0363				
AIM-9X Risk Reduction AUR TIVS SCO Mitigation Complete	1	2021	2	2021
Evaluation of Non-Explosive Thermite Linear Case Cutting Charges for AIM-9X Cook-off Mitigation in a Logistical Configuration	1	2021	2	2021
Mitigation of IM Responses in an Advanced Anti-Radiation Guided Missile Rocket Motor and 21" DIA Highly Loaded Grain Rocket Motor Insensitive Munitions Assessment and Mitigation.	1	2021	2	2021
Mitigation of IM Responses in a 21" DIA Highly Loaded Grain Rocket Motor Insensitive Munitions Assessment and Mitigation.	1	2021	2	2021
Evaluate and demonstrate solid rocket propellant using Highly Loaded Grain technology.	1	2021	4	2022
Investigate distribute fiber optic sensing for in-situ propellant health monitoring.	1	2021	4	2022
Develop, demonstrate, and qualify a Reduced Sensitivity Solventless Gun Propellant.	1	2021	4	2022
Develop, demonstrate, and qualify an enhanced extended range propelling charge for 5 inch Gun.	1	2021	4	2022
Investigate and evaluation of next generation area attack weapon slow heating concepts.	1	2021	4	2023
Evaluate and demonstrate shape memory alloy rock splitting technology for case venting.	1	2021	4	2023
Develop and demonstrate ballistic barrier concepts to improve or eliminate IM impact threats in logistical transportation and storage conditions	1	2021	4	2023
Characterize new and improved IM explosives with large critical diameters that improve IM/enhance performance. Qualification of PBXN-110 and PBXN-112 explosives using new resonant acoustic mixing	1	2021	4	2023
Qualification of PBXIH-136MOD	1	2021	4	2023

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Characterize new and improved IM explosives with large critical diameters that improve IM and enhance performance	1	2021	4	2023
Evaluate and demonstrate new rocket motor case technology to reduce reaction violence of missile and rocket propulsion systems	1	2021	4	2024
Evaluate new ordnance and container concepts.	1	2021	4	2024
Evaluation, demonstration, and qualification of new explosives that reduce collateral damage when bombs are exposed to thermal and impact threats.	1	2021	4	2024
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.	1	2021	4	2024
Qualification of PBXIH-21	1	2021	4	2024
Demonstrate IM Response of High Energy Density Fuel for Gas Turbine Powered Missile Systems	1	2022	4	2024
Evaluate and demonstrate improved solid propellant for Insensitive Munitions (IM) compliant rocket motor systems and container cook off mitigation.	1	2021	4	2025
Demonstrate IM Improvement through Integral Rocket Solid Fuel Ramjet Technology	1	2021	4	2025
Develop and Demonstrate Additively Manufactured High Order Fractal Foam Insulations for Reduced Propellant Ignition from Impact	1	2022	4	2025
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.	1	2021	4	2026
Maturation of test methods across Navy Labs for performance characterization in accordance with AOP-7	1	2022	4	2026
IM Evaluation for Shoulder-launched Assault Munitions LAW FFE (E8, E10)	1	2022	4	2026
Evaluate and Demonstrate High Energy Insensitive Medium Caliber Gun Propellant Formulations	1	2022	4	2026
Evaluate Nitinol/Ceramic Band to Cut Missile Casing for Slow Cookoff Mitigation	1	2022	4	2026

Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 0363 / *Insensitive Munitions Adv. Development*

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Develop, characterize, qualify and transition new explosives that have superior vulnerability characteristice, enhanced performance, comparable or lower manufacturing costs	1	2021	4	2027
Maintenance of SW010-AG-ORD-010 Navy Qualification of Energetics	1	2021	4	2027
Develop/Demonstrate Ordnance Technologies including warhead, fuze & component/ system level protection systems	1	2021	4	2027
Demonstrate innovative IM Technologies applied to weapon system propulsion	1	2021	4	2027
Develop and Demonstrate Gun Propulsion Technology for DON applications	1	2021	4	2027

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603609N / *Conventional Munitions*	Project (Number/Name) 3436 / *AN/BST-1 Buoy Component Re-Design*	

COST ($ in Millions)	Prior Years	FY 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total	FY 2024	FY 2025	FY 2026	FY 2027	Cost To Complete	Total Cost
3436: *AN/BST-1 Buoy Component Re-Design*	2.351	2.055	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	4.406
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 2021	FY 2022	FY 2023 Base	FY 2023 OCO	FY 2023 Total
Title: Systems Engineering and Testing	2.055	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2022 Plans: N/A					
FY 2023 Base Plans: N/A					
FY 2023 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	2.055	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 3436 / *AN/BST-1 Buoy Component Re-Design*

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.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Navy			Date: April 2022
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603609N / *Conventional Munitions*	Project (Number/Name) 3436 / *AN/BST-1 Buoy Component Re-Design*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Produce Drawings, Prototypes, Verification, Qualification and Test	MIPR	DOTC : Picatinny, NJ	1.748	1.780	Jan 2021	0.000		0.000		-		0.000	0.000	3.528	4.400
		Subtotal	1.748	1.780		0.000		0.000		-		0.000	0.000	3.528	N/A

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Services	WR	NSWC, IHEODTD : Indian Head, MD	0.603	0.275	Jan 2021	0.000		0.000		-		0.000	0.245	1.123	-
		Subtotal	0.603	0.275		0.000		0.000		-		0.000	0.245	1.123	N/A

	Prior Years	FY 2021 Cost	FY 2021 Award Date	FY 2022 Cost	FY 2022 Award Date	FY 2023 Base Cost	FY 2023 Base Award Date	FY 2023 OCO Cost	FY 2023 OCO Award Date	FY 2023 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	2.351	2.055		0.000		0.000		-		0.000	0.245	4.651	N/A

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 3436 / *AN/BST-1 Buoy Component Re-Design*

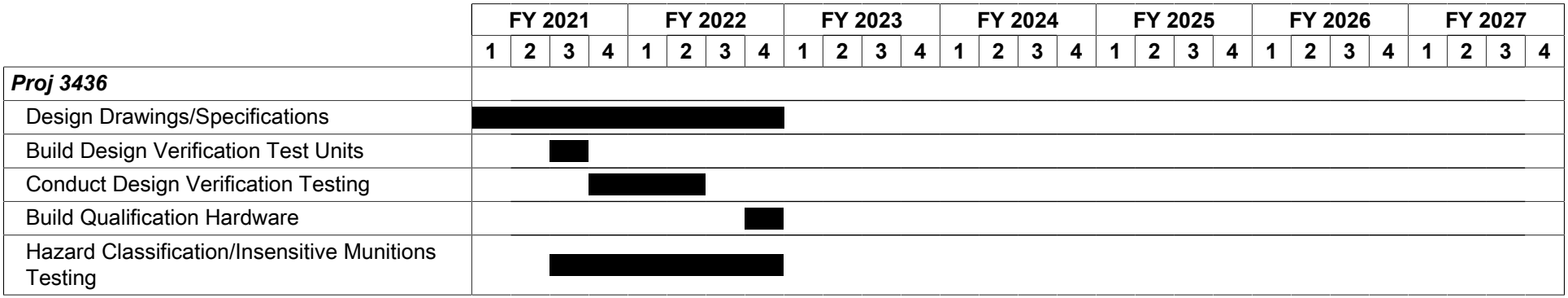


Exhibit R-4A, RDT&E Schedule Details: PB 2023 Navy		Date: April 2022
Appropriation/Budget Activity 1319 / 4	**R-1 Program Element (Number/Name)** PE 0603609N / *Conventional Munitions*	**Project (Number/Name)** 3436 / *AN/BST-1 Buoy Component Re-Design*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 3436				
Design Drawings/Specifications	1	2021	4	2022
Build Design Verification Test Units	3	2021	3	2021
Conduct Design Verification Testing	4	2021	2	2022
Build Qualification Hardware	4	2022	4	2022
Hazard Classification/Insensitive Munitions Testing	3	2021	4	2022