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**Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Army** **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040: Research, Development, Test & Evaluation, Army / BA 2: Applied Research	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology
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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	-	119.007	93.785	43.029	-	43.029	39.089	30.354	38.136	49.951	0.000	413.351
AE7: Land-Based Anti-Ship Missile (LBASM) Technology	-	21.849	14.053	-	-	-	-	-	-	-	0.000	35.902
AF1: Long Range Maneuverable Fires (LRMF) Technology	-	-	5.033	2.595	-	2.595	-	-	-	-	0.000	7.628
AF3: Extended Range Propulsion Technology	-	6.354	9.886	8.834	-	8.834	11.152	-	4.135	14.297	0.000	54.658
AF8: Affordable Extended Range Precision Technology	-	8.181	8.684	9.609	-	9.609	9.885	9.082	9.285	9.594	0.000	64.320
AG4: Extended Range Artillery Munition Suite Technology	-	8.351	11.151	6.434	-	6.434	5.562	9.289	12.884	14.440	0.000	68.111
AG6: Energetic Materials and Advanced Processing Techno	-	3.430	3.468	3.664	-	3.664	-	-	-	-	0.000	10.562
AH4: Precision and Coop Weapons in a Denied Env Tech	-	9.277	9.427	9.163	-	9.163	8.911	9.189	9.037	8.826	0.000	63.830
BN5: Fuze and Power for Munitions	-	1.065	2.583	2.730	-	2.730	3.579	2.794	2.795	2.794	0.000	18.340
BO9: WEAPONS & MUNITIONS TECH PROGRAM INITIATIVE (CA)	-	60.500	29.500	-	-	-	-	-	-	-	0.000	90.000

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

This Program Element (PE) is directly aligned to the Army Long Range Precision Fires (LRPF) Modernization Priority. Work in this PE investigates and develops LRPF technologies to destroy, neutralize, or suppress the enemy by cannon artillery and missile fire and enable integration of fire support assets into combined arms operations. Major Focus Areas for LRPF Science and Technology include: Missiles, Cannon Artillery, and Supporting LRPF Technologies covering Strategic, Operational and Tactical Fires Lines of Effort. LRPF Missiles Applied Research investigates and develops a broad range of Missile technologies to enhance Army integrated LRPF capabilities at extended range. Cannon Artillery Applied Research investigates and develops critical technologies to increase range, precision, and both point and area effects for cannon artillery. Supporting LRPF Technologies Applied Research investigates and develops a broad range of component technologies to address weapon cost drivers and enhance performance of future LRPF munitions and systems.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 2: Applied Research</i>	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / <i>Long Range Precision Fires Technology</i>
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Research in this PE complements PE 0603464A (Long Range Precision Fires Advanced Technology).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research is performed by the United States Army Futures Command (AFC).

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>
Previous President's Budget	119.007	64.285	0.000	-	0.000
Current President's Budget	119.007	93.785	43.029	-	43.029
Total Adjustments	0.000	29.500	43.029	-	43.029
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	29.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	43.029	-	43.029

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

**Project:** BO9: *WEAPONS & MUNITIONS TECH PROGRAM INITIATIVE (CA)*

Congressional Add: *Program Increase - Precision Strike Munitions*

Congressional Add: *Program Increase - Extended Range Hybrid and Precision Gun Launched Projectiles*

Congressional Add: *Program Increase - Novel Printed Armament Components*

Congressional Add: *Program Increase: Advanced Materials for Missile Applications*

Congressional Add: *Program Increase - Phase Changing Hydrogen Fuel Program*

Congressional Add: *Extended Range Propulsion Technology*

Congressional Add: *High Speed Structures for Advanced Materials*

Congressional Add Subtotals for Project: BO9

Congressional Add Totals for all Projects

	<b>FY 2021</b>	<b>FY 2022</b>
	4.000	-
	15.000	10.000
	6.500	3.000
	20.000	-
	15.000	-
	-	6.500
	-	10.000
Congressional Add Subtotals for Project: BO9	60.500	29.500
Congressional Add Totals for all Projects	60.500	29.500

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2023 Army		<b>Date:</b> April 2022
<b>Appropriation/Budget Activity</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army / BA 2: Applied Research</i>	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / <i>Long Range Precision Fires Technology</i>	

**Change Summary Explanation**

Fiscal Year 2023 (FY23) funding increase reflects the fact that the FY22 President's Budget request did not include out-year funding.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AE7 / Land-Based Anti-Ship Missile (LBASM) Technology			
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
AE7: Land-Based Anti-Ship Missile (LBASM) Technology	-	21.849	14.053	-	-	-	-	-	-	-	0.000	35.902

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by investigating and developing critical technologies to detect, engage, and defeat moving land or maritime surface targets under all conditions, and developing technologies for Precision Strike Missile (PrSM) modular payloads for the delivery of dedicated Army intelligence, surveillance and reconnaissance (ISR) payloads and attack capabilities via long range missiles.

Research in this Project complements Program Element (PE) 0603464A (Long Range Precision Fires Advanced Technology) / AE8 (Land Based Anti-Ship Missile (LBASM) Advanced Tech).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States (US) Army Futures Command (AFC).

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

	FY 2021	FY 2022	FY 2023
<p><b>Title:</b> Land Based Anti-Ship Missile Technology</p> <p><b>Description:</b> Investigate and develop critical technologies that enable High Mobility Artillery Rocket System (HIMARS) and Multiple Launch Rocket System (MLRS) rocket/missile artillery systems to destroy enemy air defenses in the land and the maritime domains.</p>	9.710	-	-
<p><b>Title:</b> Precision Strike Missile Modular Payload Technology</p> <p><b>Description:</b> Investigate and develop critical technologies for the delivery of dedicated Army ISR payloads and attack capabilities via long range missiles. Technology examples include: ISR sensor and associated signal processing technologies for target acquisition, identification, and engagement; datalink and communications technologies to transmit targetable data; compact propulsion technologies to enable loiter time on station; and payload dispensing technologies for deploying these payloads from high speed long range missiles.</p> <p><b>FY 2022 Plans:</b> Will advance the designs for payload subsystems including ISR sensor, signal processing, datalink, propulsion, and deployment mechanization; will initiate hardware fabrication of payload subsystems including ISR sensor, signal processing, datalink,</p>	12.139	13.540	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AE7 / Land-Based Anti-Ship Missile (LBASM) Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
propulsion, and deployment mechanization; and will develop system and subsystem level high fidelity modeling and simulations to assess integrated performance.  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding realigned into PE 0603464A (Long Range Precision Fires Advanced Technology) in support of the long range fires required under MDO.				
<b>Title:</b> FY2022 SBIR/STTR Transfer  <b>Description:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638		-	0.513	-
<b>Accomplishments/Planned Programs Subtotals</b>		21.849	14.053	-
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AF1 / Long Range Maneuverable Fires (LRMF) Technology			
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
AF1: Long Range Maneuverable Fires (LRMF) Technology	-	-	5.033	2.595	-	2.595	-	-	-	-	0.000	7.628

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by developing next generation Multi-Domain Operations extended range weapon system technology for Precision Strike Missile to increase survivability, penetration, and range in anti-access/area-denial (A2/AD) and denied environments.

Research in this Project complements Program Element (PE) 0603464A (Long Range Precision Fires Advanced Technology) / AF2 (Long Range Maneuverable Fires (LRMF) Advanced Tech).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States (US) Army Futures Command (AFC).

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

	FY 2021	FY 2022	FY 2023
<p><b>Title:</b> Long Range Maneuverable Fires (LRMF) Technology</p> <p><b>Description:</b> Investigates and develops critical technologies for next generation Multi-Domain Operations extended range weapon system technology for Precision Strike Missile to increase survivability, penetration, and range in complex A2/AD and denied environments.</p> <p><b>FY 2022 Plans:</b> Will determine system level technical requirements for next generation Precision Strike Missile capability; will develop system concepts; will identify subsystem functional and technical requirements; will determine critical technology requirements; and will investigate subsystem/component designs.</p> <p><b>FY 2023 Plans:</b> Will design and develop critical combined cycle propulsion technologies for integration into the Precision Strike Missile (PrSM) and assess autonomy technologies for unmanned launcher operation.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding realigned to PE 0603464A 0603464A (Long Range Precision Fires Advanced Technology) / AF2 (Long Range Maneuverable Fires (LRMF) Advanced Tech).</p>	-	4.849	2.595
<p><b>Title:</b> FY2022 SBIR/STTR Transfer</p>	-	0.184	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AF1 / Long Range Maneuverable Fires (LRMF) Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Description:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>Accomplishments/Planned Programs Subtotals</b>		-	5.033	2.595
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
N/A				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AF3 / Extended Range Propulsion Technology			
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
AF3: Extended Range Propulsion Technology	-	6.354	9.886	8.834	-	8.834	11.152	-	4.135	14.297	0.000	54.658

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by designing, fabricating, and investigating missile enabling propulsion technologies to enable range extension and/or block speed improvement for long range applications; and enables improvement in High Performance Propellants (HPP) via gains in energy density and burn rate control.

Research in this Project complements Program Element (PE) 0603464A (Long Range Precision Fires Advanced Technology) / Project AF2 (Long Range Maneuverable Fires (LRMF) Advanced Tech).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States (US) Army Futures Command (AFC).

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

	FY 2021	FY 2022	FY 2023
<b>Title:</b> Extended Range Propulsion Technology	6.354	9.526	8.834
<b>Description:</b> Designs, fabricates, and investigates missile enabling propulsion technologies to enable significant range extension and/or block speed improvement for long range applications and enables improvement in HPP via gains in energy density and burn rate control.			
<b>FY 2022 Plans:</b> Will conduct experiments and ground testing of semi-free jet air-breathing propulsion subsystems alternatives that can dramatically increase the range of rocket/missile artillery systems in the same form factor as traditional solid propellant rocket motor subsystems; will determine the viability of advanced propellant processing techniques via actual composite and minimum smoke propellant processing and static motor testing; will determine plume signature management technologies through static motor testing.			
<b>FY 2023 Plans:</b> Will complete flight weight combined cycle air-breathing propulsion subsystem design and begin fabrication and integration for follow-on experiments and assessments. Will expand and validate a propulsion modeling toolkit that allows rapid motor			

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<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AF3 / Extended Range Propulsion Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
development; will continue developing new mixing techniques to produce higher performance propellants; will determine optimized parameters for advanced, high energy propellants that will improve long range performance capability. <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding decrease due to reduced flight weight experimentation and assessments for the development of the air-breathing propulsion subsystem technology.				
<b>Title:</b> FY2022 SBIR/STTR Transfer <b>Description:</b> Funding transferred in accordance with Title 15 USC ?638 <b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638 <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638		-	0.360	-
<b>Accomplishments/Planned Programs Subtotals</b>		6.354	9.886	8.834
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AF8 / Affordable Extended Range Precision Technology			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
AF8: Affordable Extended Range Precision Technology	-	8.181	8.684	9.609	-	9.609	9.885	9.082	9.285	9.594	0.000	64.320

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

This Project directly supports Long Range Precision Fires (LRPF) Modernization Priority capabilities by investigating the design and fabrication of components and subsystems critical to produce affordable extended range precision missiles as well as critical component technologies including: advanced propulsion, seekers/sensors, fire control, datalink, guidance, navigation and controls, airframes, and additional high payoff areas.

Research in this Project complements Program element (PE) 0603464A (Long Range Precision Fires Advanced Technology) / AE8 (Land-Based Anti-Ship Missile (LBASM) Advanced Tech); PE 0602147A (Long Range Precision Fires Technology) / AF1 (Long Range Maneuverable Fires (LRMF) Technology) and PE 0603464A (Long Range Precision Fires Advanced Technology) / AF2 (Long Range Maneuverable Fires (LRMF) Advanced Tech)

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> LRPF High Payoff Missile Technology	8.181	8.367	9.609
<b>Description:</b> Identify and explore potential breakthrough technologies to mitigate or eliminate warfighter gaps in Long Range Precision Fires to gain overmatch against potential peer and near-peer adversaries.			
<b>FY 2022 Plans:</b> Will continue to develop and mature integrated board level sensor-on-a-chip utilizing advanced thermal management techniques; will develop advanced materials modeling/optimization techniques and evaluate emerging high temperature materials to reduce weight and further extend the range of long range missiles; will design and develop advanced navigation and alternate navigation approaches; will refine concepts and evaluate through modeling and simulation long range, low altitude datalink technologies and communication architectures.			
<b>FY 2023 Plans:</b> Will develop and conduct assessments of improved target state estimation techniques for strategic hypersonic missiles to enhance endgame performance; verify analysis tools that provide insight into high temperature structural composites; compare alternative navigation technology and guidance options to allow operation in GPS denied environments; integrate and verify improved navigation components for higher inertial accuracy for long range fires; finalize compact thermal management solutions			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AF8 / Affordable Extended Range Precision Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
to optimize board level sensor-on-a-chip operation for integrated application; investigate active enhanced image stabilization for improved sensor accuracy in high vibration environments.  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding increase required to broaden investigation of advancements in high temperature materials and technologies required for future missile efforts in the Long Range Precision Fires Army Modernization Priority area.				
<b>Title:</b> FY2022 SBIR/STTR Transfer  <b>Description:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638		-	0.317	-
<b>Accomplishments/Planned Programs Subtotals</b>		8.181	8.684	9.609
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AG4 / Extended Range Artillery Munition Suite Technology
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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
AG4: <i>Extended Range Artillery Munition Suite Technology</i>	-	8.351	11.151	6.434	-	6.434	5.562	9.289	12.884	14.440	0.000	68.111

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by investigating critical enabling component technologies and designing high precision terminal guidance in denied environments, capable of surviving high gun shock loads, at extended ranges, and automated cannon artillery technologies to increase operational tempo and unburden the soldier.

Research in this Project complements Program Element (PE) 0603464A Long Range Precision Fires Advanced Technology / AG5 (Extended Range Artillery Munition Suite Adv Tech).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

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

	FY 2021	FY 2022	FY 2023
<p><b>Title:</b> Precision At Range Technologies</p> <p><b>Description:</b> Investigates technologies that provide affordable precision capabilities for projectiles fired into Global Positioning System (GPS) denied environments.</p> <p><b>FY 2022 Plans:</b> Will investigate Electro-Optical/Infra-Red (EO/IR) Seeker performance including imaging detectors, optics trains, and supporting electronics for processing target recognition software integrated into a 155mm precision guided munition. Will conduct target data collections to inform algorithm development in advanced precision seekers. Will validate seeker sensor and algorithm modeling and simulation (M&amp;S) performance against real world data. Will design and develop component technologies such as tactical grade Inertial Measurement Unit (IMU) hardware to ensure gun-launch survivability.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Effort is complete in FY22</p>	3.151	3.087	-
<p><b>Title:</b> Extended Range Artillery Munition Suite Enabling Technologies</p>	1.997	1.935	2.133

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<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AG4 / Extended Range Artillery Munition Suite Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b>Description:</b> This effort develops, matures and integrates a gun hardened suite of components (software, sensors, navigation and communications) to enable the application of distributed, cooperative and collaborative tactics for munitions and Radio Frequency (RF) seeking components.</p> <p><b>FY 2022 Plans:</b> Will mature component technologies for extended range artillery projectiles through novel and improved algorithms using refined guidance and navigation system design concepts; conduct component level experiments to validate modeled performance to determine Size, Weight, and Power (SWaP) allocations required for future munition systems; will investigate solutions to enable in-flight, intra-munition communications, enhancing performance against targets in highly cluttered environments.</p> <p><b>FY 2023 Plans:</b> Will validate component technologies for extended range artillery projectiles using refined guidance and navigation system design concepts; mature component level technologies to validate size, weight, and power allocations required for future munition systems; validate solutions to enable in-flight, intra-munition communications, enhancing performance against targets in highly cluttered environments.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding reflects planned lifecycle for this effort.</p>				
<p><b>Title:</b> Optionally Manned Artillery Platform Technology</p> <p><b>Description:</b> This effort designs and develops cannon artillery automation technologies including automated fuze/fuze setting technologies, automated prognostics/diagnostics, automated and rapid rearm technologies, and automated ammunition inventory to increase operational tempo of current and future cannon artillery systems to unburden the soldier</p> <p><b>FY 2022 Plans:</b> Will investigate sensing technologies to improve spatial awareness for optionally manned artillery loading operations. Will investigate and design solutions to increase the speed of automated fuze setting for artillery autoloader applications. Will design solutions for prognostic systems to unburden the soldier during artillery loading operations and investigate an open architecture to enable connection to an optionally manned hull. Will design automated resupply component technologies and conduct experiments to define requirements for automated resupply.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Efforts in support of 6.2 activities are complete in FY22.</p>		3.203	2.786	-
<p><b>Title:</b> Large Caliber Cannon Technologies</p>		-	2.936	3.198

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AG4 / Extended Range Artillery Munition Suite Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p><b>Description:</b> This effort will advance the current state of the art in cannon and barrel technology for compatibility with higher velocity and precision munitions, harder rotating bands, high temperature operation, robustness against non-firing loads, and minimized weight and imbalance. This effort will investigate cannon concepts focused on residual stress &amp; dynamic strain reduction, coating metallurgy, and barrel cooling to increase tube life and performance in high demand environments.</p> <p><b>FY 2022 Plans:</b> Will investigate technologies to improve the life and performance of large caliber cannons. Will investigate: novel materials and impacts on dynamic strain using multiscale modeling, residual stress through triaxial stress/strain measurements of cannon tubes, novel refractory coating technologies, and barrel cooling techniques to reduce temperature rise at high rates of fire. Will conduct experiments and modeling to mature component technologies for future armament systems.</p> <p><b>FY 2023 Plans:</b> Will continue to investigate and develop technologies to improve the life and performance of large caliber cannons. Will conduct experiments on novel materials using modeling and simulation to include: impacts on dynamic strain; residual stress through tri-axial stress/strain measurements of cannon tubes; novel refractory coating technologies; and barrel cooling techniques to reduce temperature at high rates of fire. Modeling and experiments will be conducted to mature component technologies for future armament systems.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding reflects planned life cycle for this effort.</p>				
<p><b>Title:</b> Precision Munitions Technology</p> <p><b>Description:</b> This effort develops technology enablers which are critical to increasing precision and effectiveness for large caliber armaments at extended ranges in extreme launch and flight environments. These technology enhancements are required for sustaining and increasing mission capabilities in degraded and contested environments.</p> <p><b>FY 2023 Plans:</b> Will design munition precision technology enablers including: RF converged seeker technologies, gun hardened inertial navigation systems, and on-board targeting algorithms. Will investigate small form factor gun hardened systems to evaluate performance against aerial and ground targets. Will validate modeling and simulation results of Integrated Aerial Defense System (IADS) penetration by precision artillery munitions.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b></p>		-	-	1.103

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AG4 / Extended Range Artillery Munition Suite Technology		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
Increase in funding to develop technologies necessary for large caliber armaments to reach with enhanced precision aerial and ground targets in degraded and contested environments.				
<b>Title:</b> FY2022 SBIR/STTR Transfer		-	0.407	-
<b>Description:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>Accomplishments/Planned Programs Subtotals</b>		8.351	11.151	6.434
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
N/A				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AG6 / Energetic Materials and Advanced Processing Techno			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
AG6: <i>Energetic Materials and Advanced Processing Techno</i>	-	3.430	3.468	3.664	-	3.664	-	-	-	-	0.000	10.562

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by investigating critical component technology of propellants and energetic materials to increase the range of artillery and mortar rocket assisted projectiles.

Research in this Project complements (Program Element ) PE 0602141A (Lethality Technology) / AH9 (Advanced Warheads Technology) and PE 0603464A (Long Range Precision Fires Advanced Technology) / AG5 (Extended Range Artillery Munition Suite Adv Tech).

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Scale-up of Insensitive Energetic Materials	3.430	3.341	3.664
<b>Description:</b> Conduct research to advance the maturity of disruptive energetic materials.			
<b>FY 2022 Plans:</b> Will develop synthesis processes and fabrication of energetic materials applicable to a wide range of additive manufacturing technologies, and conduct experiments of additive energetic components; will develop embedded ignition concepts for additively manufactured gun propulsion charges and conduct advanced ignition experiments; will continue to conduct experiments of Electrically Controlled Energetic Materials (ECEM) formulations; will design and develop next generation post launch propulsion on gun launched concepts for extended range.			
<b>FY 2023 Plans:</b> Will validate the synthesis and fabrication of energetic materials applicable to a wide range of additive manufacturing technologies; . Will conduct experiments of additive energetic components and novel energetic materials initiated with additive energetic component materials to reduce sensitivity; . Will design energetic processing technologies for advanced energetic materials.			
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding change reflects planned life cycle of this effort.			
<b>Title:</b> FY2022 SBIR/STTR Transfer	-	0.127	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AG6 / Energetic Materials and Advanced Processing Techno		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Description:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638				
<b>Accomplishments/Planned Programs Subtotals</b>		3.430	3.468	3.664
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
N/A				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army										<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2					<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology				<b>Project (Number/Name)</b> AH4 / Precision and Coop Weapons in a Denied Env Tech			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023 Base</b>	<b>FY 2023 OCO</b>	<b>FY 2023 Total</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
AH4: Precision and Coop Weapons in a Denied Env Tech	-	9.277	9.427	9.163	-	9.163	8.911	9.189	9.037	8.826	0.000	63.830

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

This Project investigates technologies to deliver accurate fires from extended ranges in denied environments and informs future close- and deep-range Long Range Precision Fires capabilities (e.g., Extended Range Cannon Artillery, Precision Strike Missile).

Research in this Program Element (PE) researches technologies for navigation of munitions without Global Positioning System (GPS) and flying munitions to much greater distances against advanced threat Area Denial Assets by delivering navigation technology for multiple munitions with complementary sensors and maneuverability technology for munitions with enhanced lift and control characteristics.

Research in this Project transitions foundational research obtained in PE 0601102A (Defense Research Sciences) / AA7 (Mechanics and Ballistics) and complements PE 0602141A (Lethality Technology) / Project AH6 (Disruptive Energetics and Propulsion Technologies), Project AH7 (Lethal and Scalable Effects Technologies), and Project AH8 (Lethality Materials and Processes Technology).

The cited research is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

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

	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<b>Title:</b> Munition Navigation Technology in Contested Environments	4.919	4.817	-
<b>Description:</b> This effort investigates, designs, and transitions technologies to improve navigation (e.g., better accuracy, more information/aim-point refinement, reduce GPS dependency) of munitions subject to denied environments (e.g., electro-magnetic spectrum contested, counter-measures). Key technologies include algorithms for image processing, state estimation, and communications, embedded processing and electronics, and sensors (e.g., inertial, imagers with optics, software-defined radios and antennae).			
<b>FY 2022 Plans:</b> Will conduct experiments on collaborative engagements to include multiple unmanned aerial systems equipped with imagers, software-defined radios, inertial measurement units, and embedded processors for validation of unanchored multi-agent			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AH4 / Precision and Coop Weapons in a Denied Env Tech		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
<p>localization (UMAL), UMAL-Aided anchored localization, formation control, multi-agent tracking, and weapon-target assignment; will conduct experiments on mid-course navigation technologies and data collection for terminal guidance algorithms.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding realigned to ?Foundational Weapons Flight and Guidance Technology in Extreme Environments? in this Project.</p>				
<p><b>Title:</b> Munition Maneuvering Technology in Extreme Environments</p> <p><b>Description:</b> This effort investigates and designs technologies to improve maneuverability (e.g., extended range glide, intercept moving target, course- correct to imperfectly located target, perform evasive terminal maneuver to increase survivability) of munitions subject to extreme environments (set-back, set-forward, and balloting loads encountered during gun launch and thermal loads encountered during high speed/long time flights). These technologies include the maneuvering airframe, control actuation, and flight control algorithms.</p> <p><b>FY 2022 Plans:</b> Will conduct experiments to validate spiral technologies for long range precision fires airframe design concepts and characterization, control actuation, guidance and flight control algorithms; will conduct analysis of unique ballistic launch and flight system simulations to characterize hypersonic flight behaviors.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding realigned to ?Foundational Weapons Flight and Guidance Technology in Extreme Environments? in this Project.</p>		4.358	4.266	-
<p><b>Title:</b> Foundational Weapons Flight and Guidance Technology in Extreme Environments</p> <p><b>Description:</b> This effort investigates, designs, and develops technologies to improve guidance (e.g., better accuracy, more information/aim-point refinement, reduce GPS dependency) and flight (extended range glide, intercept moving target, course correct to imperfectly located target, perform evasive terminal maneuver to increase survivability) of munitions subject to extreme environments (e.g., set-back, set-forward and balloting load, electro-magnetic spectrum contested, counter-measures). Key navigation technologies include algorithms for image processing, state estimation, communications, embedded processing and electronics, and sensors (e.g., inertial, imagers with optics, software-defined radios and antennae). Key maneuvering technologies include the airframe, control actuation, and flight control algorithms.</p> <p><b>FY 2023 Plans:</b> Will validate mid-course navigation technologies (image and radio frequency based); mature terminal guidance algorithms using simulation and experimental data capture; conduct experiments on collaborative engagements to include multiple unmanned aerial systems equipped with imagers, software-defined radios, inertial measurement units, and embedded processors for validation of unanchored multi-agent localization (UMAL), UMAL-Aided anchored localization, formation control, multi-agent tracking, and weapon-target assignment; conduct experiments to better understand and characterize complex control vehicle</p>		-	-	9.163

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> AH4 / Precision and Coop Weapons in a Denied Env Tech		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
flight response, validate spiral technologies for long-range precision fires airframe design concepts and flight control algorithms; conduct analysis of unique ballistic launch and flight system simulations; design munition guidance algorithms and required system characteristics to improve terminal survivability against integrated air defense system targets.  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding realigned from ?Munition Navigation Technology in Contested Environments? and ?Munition Maneuvering Technology in Extreme Environments? within this Project.				
<b>Title:</b> FY2022 SBIR/STTR Transfer  <b>Description:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 Plans:</b> Funding transferred in accordance with Title 15 USC ?638  <b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding transferred in accordance with Title 15 USC ?638		-	0.344	-
<b>Accomplishments/Planned Programs Subtotals</b>		9.277	9.427	9.163
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b> N/A				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> BN5 / Fuze and Power for Munitions
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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
BN5: Fuze and Power for Munitions	-	1.065	2.583	2.730	-	2.730	3.579	2.794	2.795	2.794	0.000	18.340

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

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by investigating critical component technologies and designs capable to enable advanced lethality and scalable warheads for future munitions as well as exploring new power technologies for extended run time and extended range munitions.

The cited research is consistent with the Assistant Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Research in this Project is performed by the United States Army Futures Command (AFC).

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

	FY 2021	FY 2022	FY 2023
<p><b>Title:</b> Advanced Energetics</p> <p><b>Description:</b> This effort develops advanced fuze and power technologies for future munition applications that enable an increase in range and lethality, of ammunitions.</p> <p><b>FY 2022 Plans:</b> Will conduct experiments to mature components and algorithms for tracking proximity sensors; will design fuze breadboards for wireless setting and advanced multi-point initiation architectures; will conduct power source performance predictions and investigations of experimental materials. This effort will continue to leverage the Office of the Secretary of Defense (OSD) Joint Munitions Program TCG-3 and the OSD Joint Fuze Technology Program.</p> <p><b>FY 2023 Plans:</b> Will investigate hardened electronic and energetic interface concepts for future initiation systems; wireless communications designs for global positioning system (GPS) synchronization and secure data transfer; design novel thermal batteries for increased range munition applications; validate captive flight testing for tracking proximity sensor algorithm development.</p> <p><b>FY 2022 to FY 2023 Increase/Decrease Statement:</b> Funding change reflects planned lifecycle of this effort.</p>	1.065	2.488	2.730
<p><b>Title:</b> FY2022 SBIR/STTR Transfer</p> <p><b>Description:</b> Funding transferred in accordance with Title 15 USC ?638</p> <p><b>FY 2022 Plans:</b></p>	-	0.095	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022		
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / <i>Long Range Precision Fires Technology</i>	<b>Project (Number/Name)</b> BN5 / <i>Fuze and Power for Munitions</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>
Funding transferred in accordance with Title 15 USC ?638				
<b><i>FY 2022 to FY 2023 Increase/Decrease Statement:</i></b>				
Funding transferred in accordance with Title 15 USC ?638				
<b>Accomplishments/Planned Programs Subtotals</b>		1.065	2.583	2.730
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
N/A				

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**Exhibit R-2A, RDT&E Project Justification:** PB 2023 Army **Date:** April 2022

<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> BO9 / WEAPONS & MUNITIONS TECH PROGRAM INITIATIVE (CA)
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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
BO9: WEAPONS & MUNITIONS TECH PROGRAM INITIATIVE (CA)	-	60.500	29.500	-	-	-	-	-	-	-	0.000	90.000

**Note**  
Congressional Interest Item funding provided for Weapons and Munitions Tech Program Initiative.

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

Congressional Interest Item funding provided for Weapons and Munitions Tech Program Initiative.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

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

	FY 2021	FY 2022
<b>Congressional Add:</b> Program Increase - Precision Strike Munitions <b>FY 2021 Accomplishments:</b> Conducted applied research in Precision Strike Munitions.  Work executed by Army Futures Command.	4.000	-
<b>Congressional Add:</b> Program Increase - Extended Range Hybrid and Precision Gun Launched Projectiles <b>FY 2021 Accomplishments:</b> Conducted applied research in Extended Range Hybrid and Precision Gun Launched Projectiles.  Work executed by Army Futures Command. <b>FY 2022 Plans:</b> Congressional Interest Item funding provided for Extended Range and Hybrid Gun Launched Unmanned Aerial System	15.000	10.000
<b>Congressional Add:</b> Program Increase - Novel Printed Armament Components <b>FY 2021 Accomplishments:</b> Conducted applied research in Novel Printed Armament Components.	6.500	3.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2023 Army		<b>Date:</b> April 2022	
<b>Appropriation/Budget Activity</b> 2040 / 2	<b>R-1 Program Element (Number/Name)</b> PE 0602147A / Long Range Precision Fires Technology	<b>Project (Number/Name)</b> BO9 / WEAPONS & MUNITIONS TECH PROGRAM INITIATIVE (CA)	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2021</b>	<b>FY 2022</b>
Work executed by Army Futures Command.			
<b>FY 2022 Plans:</b> Congressional Interest Item funding provided for Novel Printed Armament Components			
<b>Congressional Add:</b> Program Increase: Advanced Materials for Missile Applications		20.000	-
<b>FY 2021 Accomplishments:</b> Conducted applied research in Advanced Materials for Missile Applications.			
Work executed by Army Futures Command.			
<b>Congressional Add:</b> Program Increase - Phase Changing Hydrogen Fuel Program		15.000	-
<b>FY 2021 Accomplishments:</b> Conducted applied research in Phase Changing Hydrogen Fuel Program.			
Work executed by Army Futures Command.			
<b>Congressional Add:</b> Extended Range Propulsion Technology		-	6.500
<b>FY 2022 Plans:</b> Congressional Interest Item funding provided for Extended Range Propulsion Technology			
<b>Congressional Add:</b> High Speed Structures for Advanced Materials		-	10.000
<b>FY 2022 Plans:</b> Congressional Interest Item funding provided for High Speed Structures for Advanced Materials			
<b>Congressional Adds Subtotals</b>		60.500	29.500
<b>C. Other Program Funding Summary (\$ in Millions)</b>			
N/A			
<b>Remarks</b>			
<b>D. Acquisition Strategy</b>			
N/A			