Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army												Date: March 2019
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603464A *I Long Range Precision Fires Advanced Technology*							
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	-	0.000	0.000	174.386	-	174.386	118.682	85.471	72.670	97.524	0.000	548.733
AE6: *Strategic Long Range Cannon Advanced Technology*	-	0.000	0.000	77.000	-	77.000	0.000	0.000	0.000	0.000	0.000	77.000
AE8: *Land-Based Anti-Ship Missile (LBASM) Advanced Tech*	-	0.000	0.000	6.761	-	6.761	10.067	15.908	11.800	0.000	0.000	44.536
AE9: *Low-Cost Tact Ext Range Missile (LC-TERM) Adv Tech*	-	0.000	0.000	14.149	-	14.149	10.087	0.000	0.000	0.000	0.000	24.236
AF2: *Long Range Maneuverable Fires (LRMF) Advanced Tech**	-	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	11.210	0.000	11.210
AF4: *Missile Simulation Advanced Technology*	-	0.000	0.000	0.273	-	0.273	2.623	2.678	2.731	2.762	0.000	11.067
AG3: *Extended Range Cannon Artillery (ERCA) Adv Tech*	-	0.000	0.000	19.992	-	19.992	15.319	0.000	0.000	0.000	0.000	35.311
AG5: *Extended Range Artillery Munition Suite Adv Tech*	-	0.000	0.000	35.600	-	35.600	45.275	34.246	23.651	23.915	0.000	162.687
AG7: *Energetic Materials and Adv Processing Adv Tech*	-	0.000	0.000	2.040	-	2.040	2.081	2.123	2.165	2.189	0.000	10.598
AH1: *Multiple Simul Engagement Technologies Adv Tech**	-	0.000	0.000	0.000	-	0.000	0.000	6.416	10.520	8.347	0.000	25.283
AH3: *Single Multi-mission Attack Missile Adv Tech*	-	0.000	0.000	5.683	-	5.683	3.000	0.000	0.000	0.000	0.000	8.683
BS3: *Strategic Missile Advanced Technology*	-	0.000	0.000	12.888	-	12.888	30.230	24.100	21.803	49.101	0.000	138.122

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2020

Note

All other efforts in this Program Element (PE) were previously funded, with continuity of effort realigned from the following PEs:
* 0603004A (Weapons and Munitions Advanced Technology)
* 0603313A (Missile and Rocket Advanced Technology)

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army	Date: March 2019
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603464A *I Long Range Precision Fires Advanced Technology*

A. Mission Description and Budget Item Justification

This PE matures and demonstrates Long Range Precision Fires (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. LRPF Missiles Advanced Development matures and demonstrates a broad range of Missile technologies to enhance Army integrated LRPF capabilities at extended range. Cannon Artillery Advanced Development matures and demonstrates critical technologies to increase range, precision, and both point and area effects for cannon artillery. Supporting LRPF Technologies Advanced Development matures and demonstrates a broad range of component technologies to address weapon cost drivers and enhance performance of future LRPF munitions and systems.

Work in this PE complements PE 0602147A Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work is performed by the U.S. Army Futures Command (AFC).

B. Program Change Summary ($ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	0.000	0.000	-	0.000
Current President's Budget	0.000	0.000	174.386	-	174.386
Total Adjustments	0.000	0.000	174.386	-	174.386
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	174.386	-	174.386

Change Summary Explanation

Beginning in FY20, this PE realigns ongoing efforts from other PEs within the Science and Technology portfolio related to Long Range Precision Fires Advanced Technology.

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AE6 / *Strategic Long Range Cannon Advanced Technology*	

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
AE6: *Strategic Long Range Cannon Advanced Technology*	-	0.000	0.000	77.000	-	77.000	0.000	0.000	0.000	0.000	0.000	77.000

Note

Was previously funded in PE 0603004A / 232: Advanced Lethality & Survivability Demo

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by maturing and demonstrating technologies for a long range cannon capability to deliver lethal effects at strategic ranges while providing lethality overmatch.

Work in this Project complements PE 0602147 Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Strategic Long Range Cannon Advanced Technology	-	-	77.000
Description: This effort will mature and demonstrate subsystem technologies to further enhance range, lethality, and precision enablers for extended range cannon and munition systems. ***FY 2020 Plans:*** Will mature and optimize long range armament technologies for both weapons and munitions to support potential deep strike objective capabilities from future cannon artillery systems; will enhance component level technologies for novel cannon, munition, and fire control, including guidance and propulsion systems, for artillery fired projectiles. Will provide revolutionary performance for Long Range Fires by developing enhanced lethality and range extension technologies for integrated system level performance with maximum effects from cannons. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** Was previously funded in PE 0603004A / 232: Advanced Lethality & Survivability Demo			
Accomplishments/Planned Programs Subtotals	-	-	77.000

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AE6 / *Strategic Long Range Cannon Advanced Technology*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AE8 / *Land-Based Anti-Ship Missile (LBASM) Advanced Tech*	

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
AE8: *Land-Based Anti-Ship Missile (LBASM) Advanced Tech*	-	0.000	0.000	6.761	-	6.761	10.067	15.908	11.800	0.000	0.000	44.536

Note

In Fiscal Year (FY) 2020 this Project is realigned from:
Program Element (PE) 0603313A Missile and Rocket Advanced Technology, Project:
* 263 Future Msl Tech Integr (FMTI)

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by maturing and demonstrating critical technologies to detect, engage, and defeat moving land or maritime surface targets under all conditions.

Work in this Project complements PE 0602147A Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Land Based Anti-Ship Missile (LBASM) Advanced Technology	-	-	6.761
Description: Matures and demonstrates 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.			
FY 2020 Plans: Will continue component integration/demonstration of multi-mode seeker that provides target classification/discrimination and aim-point selection on critical target features and lethal payload that provides maximum effects against multi-domain target sets. Will also continue to validate components and optimize concepts for system integration.			
FY 2019 to FY 2020 Increase/Decrease Statement: In FY 2020, ongoing work is transferred from other PEs..			
Accomplishments/Planned Programs Subtotals	-	-	6.761

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AE8 / *Land-Based Anti-Ship Missile (LBASM) Advanced Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AE9 / *Low-Cost Tact Ext Range Missile (LC-TERM) Adv Tech*	

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
AE9: *Low-Cost Tact Ext Range Missile (LC-TERM) Adv Tech*	-	0.000	0.000	14.149	-	14.149	10.087	0.000	0.000	0.000	0.000	24.236

Note

In Fiscal Year (FY) 2020 this Project is realigned from:
Program Element (PE) 0603313A Missile and Rocket Advanced Technology, Project:
* 263 Future Msl Tech Integr (FMTI)

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by maturing and demonstrating propulsion technologies that enables extended range target engagements and navigation component technologies that reduce dependence on Global Positioning System (GPS) for precision effects.

Work in this Project complements PE 0602147A Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Low-Cost Tactical Extended Range Missile (LC-TERM) Advanced Technology	-	-	14.149
Description: Mature and demonstrate propulsion technologies that enables extended range target engagement and navigation component technologies that reduce dependence on GPS for precision. ***FY 2020 Plans:*** Will integrate enhanced long-range fires navigation components and demonstrate performance in high fidelity hardware-in-the-loop simulation environment validating improved precision guidance in GPS degrade environments. Will also integrate high temperature fiber, resin, nozzle, and structures propulsion component technologies and demonstrate performance through static solid rocket motor firing validating improved energy output in the same form factor. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** In FY 2020, ongoing work is transferred from other PEs.			
Accomplishments/Planned Programs Subtotals	-	-	14.149

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AE9 / *Low-Cost Tact Ext Range Missile (LC-TERM) Adv Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AF4 / *Missile Simulation Advanced Technology*	

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
AF4: *Missile Simulation Advanced Technology*	-	0.000	0.000	0.273	-	0.273	2.623	2.678	2.731	2.762	0.000	11.067

Note

In Fiscal Year (FY) 2020 this Project was realigned from:
Program Element (PE) 0603313A Missile and Rocket Advanced Technology, Project:
* 206 Missile Simulation

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by maturing and demonstrating enhanced analysis and high fidelity modeling and simulation technologies for advanced missiles and interceptor design and analysis.

Work in this Project complements PE 0602147A Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Missile Simulation Advanced Technology	-	-	0.273
Description: Mature and demonstrate enhanced analysis and high fidelity modeling and simulation technologies for advanced missiles and interceptor design and analysis. ***FY 2020 Plans:*** Will mature the development of very high speed missile simulation architectures for rapid performance predictions; inform technology requirements; and reduce technology development timelines. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** In FY 2020, ongoing work is transferred from other PEs for this effort.			
Accomplishments/Planned Programs Subtotals	-	-	0.273

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AF4 / *Missile Simulation Advanced Technology*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AG3 / *Extended Range Cannon Artillery (ERCA) Adv Tech*	

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
AG3: *Extended Range Cannon Artillery (ERCA) Adv Tech*	-	0.000	0.000	19.992	-	19.992	15.319	0.000	0.000	0.000	0.000	35.311

Note

In Fiscal Year (FY) 2020 this Project was realigned from:
Program Element (PE) 0603004A Weapons and Munitions Advanced Technology, Project:
* 232 Advanced Lethality & Survivability Demo

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities. This effort matures and demonstrates artillery technologies including light weight cannon and mount structures, high efficiency recoil cylinders, common lower power fire control hardware, improved fire control software, and improved sensor to shooter communications which will increase range and accuracy without an increase in platform weight.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Extended Range Cannon Artillery Advanced Technology	-	-	19.992
Description: This effort matures and demonstrates extended range Armament technologies including Cannons and Gun Mounts, novel integration for automation, improved fire control, ammunition handling, and improved sensor to shooter communications which will maximize range increases and enable increase precision with next generation munition and target acquisition technology.			
FY 2020 Plans: Will continue maturation of integration and automation technologies for ammunition handling and weapon control, initial prototype and demonstration of advanced precision technologies from fire control sensors and systems; Will optimize cannon, mount, and weapon system components to maximize weight reduction and automation adaptability			
FY 2019 to FY 2020 Increase/Decrease Statement: In FY 2020, ongoing work is transferred from other PEs for this effort.			
Accomplishments/Planned Programs Subtotals	-	-	19.992

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AG3 / *Extended Range Cannon Artillery (ERCA) Adv Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AG5 / *Extended Range Artillery Munition Suite Adv Tech*	

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
AG5: *Extended Range Artillery Munition Suite Adv Tech*	-	0.000	0.000	35.600	-	35.600	45.275	34.246	23.651	23.915	0.000	162.687

Note

In Fiscal Year (FY) 2020 this Project is realigned from:
Program Element (PE) 0603004A Weapons and Munitions Advanced Technology, Project:
* 232 Advanced Lethality & Survivability Demo

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities. This effort matures and demonstrates extended range artillery technologies including advanced projectile propulsion and guidance technologies to increase range and accuracy.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Extended Range Artillery Munition Suite Advanced Technology	-	-	35.600
Description: Matures and optimizes long range unitary artillery projectile systems in the areas of range, precision, counter-measure, and payload technologies.			
FY 2020 Plans: Effort will validate system modeling and simulation to improve projectile performance by integrating the optimal configurations of technologies; will develop and demonstrate integrated concepts for Extended Range Artillery Projectiles (e.g. XM1155) in the areas of increased range, sensor optimization and integration, improved algorithms and refined concepts at extended ranges in Integrated Air Defense Systems (IADS) contested and GPS-denied environments for armor and counter-battery defeat; will optimize system development for extended range cargo munitions for advanced area effects munition compatible with legacy and ERCA in the following areas: 1) dispensing techniques and sensor optimization for improved area effects to service imprecisely located targets ; 2) optimal formulations and characteristics for smoke and illumination payloads that maximize effectiveness ; and 3) survivability of cannon-launched terrain shaping munition for maximum area denial effects; will conduct critical design review			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AG5 / *Extended Range Artillery Munition Suite Adv Tech*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
of component technologies; will perform demonstration to validate key enabling component technologies; optimize concepts for system integration; and will mature modeling and simulation concepts for subsequent validation. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** In FY 2020, ongoing work is transferred from other PEs for this effort.			
Accomplishments/Planned Programs Subtotals	-	-	35.600

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AG7 / *Energetic Materials and Adv Processing Adv Tech*	

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
AG7: *Energetic Materials and Adv Processing Adv Tech*	-	0.000	0.000	2.040	-	2.040	2.081	2.123	2.165	2.189	0.000	10.598

Note

In Fiscal Year (FY) 2020 this Project was realigned from:
Program Element (PE) 0603004A Weapons and Munitions Advanced Technology, Project:
* 232 Advanced Lethality & Survivability Demo

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities. This effort matures and demonstrates the performance of energetic materials ranging from medium caliber through large caliber weapons.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Energetic Materials and Advanced Processing Advanced Technology	-	-	2.040
Description: This effort matures and demonstrates the performance and insensitivity of energetic materials ranging from 25mm medium caliber (direct fire) through 155mm large caliber (indirect fire) weapons. ***FY 2020 Plans:*** Will continue to qualify energetic materials for complete material characterization; demonstrate high-energy, reduced sensitivity, metalized formulations for dual purpose representative munitions; will demonstrate high-energy, reduced sensitivity formulations for shaped charge representative munitions; will demonstrate high energy propellant in representative applications; will continue to optimize and demonstrate advanced processing methods of novel materials. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** In FY 2020, ongoing work is transferred from other PEs for this effort.			
Accomplishments/Planned Programs Subtotals	-	-	2.040

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AG7 / *Energetic Materials and Adv Processing Adv Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) AH3 / *Single Multi-mission Attack Missile Adv Tech*	

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
AH3: *Single Multi-mission Attack Missile Adv Tech*	-	0.000	0.000	5.683	-	5.683	3.000	0.000	0.000	0.000	0.000	8.683

Note

In Fiscal Year (FY) 2020 this Project was realigned from:
Program Element (PE) 0603313A Missile and Rocket Advanced Technology, Project:
* 263 Future Msl Tech Integr (FMTI)

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities. Matures and demonstrate technologies for an expeditionary short-to-medium range loitering missile with man-in-the-loop capability for situational awareness, targeting, and lethal effects against hard and soft targets.

Work in this Project complements PE 0602147A Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy. All FY 2020 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Single Multi-mission Attack Missile (SMAM) Advanced Technology	-	-	5.683
Description: Matures and demonstrate technologies for an expeditionary short-to- medium range loitering missile with man-in-the-loop capability for situational awareness, targeting, and lethal effects against hard and soft targets. ***FY 2020 Plans:*** Will integrate certified mini-crypto module in an extended range missile digital datalink for secure missions. Develop and integrate inertial navigation aiding sensors and algorithms to provide suitable target accuracy for terminal engagement in GPS degraded/ denied environments. Perform static testing of multi-effects warhead technologies optimized to defeat future mechanized threats. ***FY 2019 to FY 2020 Increase/Decrease Statement:*** In FY 2020, ongoing work is transferred from other PEs for this effort.			
Accomplishments/Planned Programs Subtotals	-	-	5.683

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** AH3 / *Single Multi-mission Attack Missile Adv Tech*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army			Date: March 2019
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603464A / *Long Range Precision Fires Advanced Technology*	Project (Number/Name) BS3 / *Strategic Missile Advanced Technology*	

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
BS3: *Strategic Missile Advanced Technology*	-	0.000	0.000	12.888	-	12.888	30.230	24.100	21.803	49.101	0.000	138.122

Note

In Fiscal Year (FY) 2020 this Project was realigned from:
Program Element (PE) 0603313A Missile and Rocket Advanced Technology, Projects:
* 263 Future Msl Tech Integr (FMTI)
* 704 Advanced Missile Demo
PE 0603004A Weapons and Munitions Advanced Technology, Projects:
* 232 Advanced Lethality & Survivability Demo

A. Mission Description and Budget Item Justification

This Project directly supports Long Range Precision Fires Modernization Priority capabilities by developing and maturing critical technologies for ground-based strategic missiles. Technology development includes critical technologies to improve strategic missile components such as advanced structures and materials, thermal protection systems, guidance/seekers, navigation systems, electronic controls, improve/miniaturize avionics and automated fight termination systems.

Work in this Project complements PE 0602147 Long Range Precision Fires Technology.

The cited work is consistent with the Under Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy. All FY20 adjustments align program financial structure to Army Modernization Priorities in support of the National Defense Strategy.

Work in this Project is performed by the U.S. Army Futures Command (AFC) and the U. S. Army Space and Missile Defense Command (SMDC)

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Title: Strategic Missile Advanced Technology	-	-	12.888
Description: This effort develops and matures critical technologies for ground-based strategic missiles.			
FY 2020 Plans: Will continue to develop and mature critical technologies to improve strategic missile components such as advanced structures and materials, thermal protection systems, guidance/seekers, navigation systems, electronic controls, improve/miniaturize avionics and automated flight termination systems.			
FY 2019 to FY 2020 Increase/Decrease Statement:			

Exhibit R-2A, RDT&E Project Justification: PB 2020 Army		Date: March 2019
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603464A / *Long Range Precision Fires Advanced Technology*	**Project (Number/Name)** BS3 / *Strategic Missile Advanced Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2018	FY 2019	FY 2020
Ongoing work transferred from other PEs due to S&T financial restructuring.			
Accomplishments/Planned Programs Subtotals	-	-	12.888

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A