Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*					R-1 Program Element (Number/Name) PE 0603313A *I Missile and Rocket Advanced Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	113.683	62.850	61.132	-	61.132	56.578	54.093	55.332	63.490	0.000	467.158
206: *Missile Simulation*	-	2.342	2.476	2.488	-	2.488	2.573	2.623	2.678	2.731	0.000	17.911
263: *Future Msl Tech Integr(FMTI)*	-	22.387	34.725	39.212	-	39.212	30.163	31.320	38.654	39.441	0.000	235.902
704: *Advanced Missile Demo*	-	25.454	25.649	19.432	-	19.432	23.842	20.150	14.000	21.318	0.000	149.845
NA6: *Missile and Rocket Initiatives (CA)*	-	63.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	63.500

A. Mission Description and Budget Item Justification

This Program Element (PE) matures, fabricates, and demonstrates advanced rocket, missile, interceptor, and guided munition technologies to enhance weapon system lethality, survivability, agility, deployability, and affordability. Project 206 develops high fidelity simulations for advanced tactical missiles and interceptors. Project 263 demonstrates missile and interceptor systems with capabilities to provide protection against rockets, artillery, and mortars; provide precision weapons for small units in close combat; provide precision long-range fires; and provide minimum smoke propulsion for aviation missiles. Project 704 demonstrates the capability to detect and track rocket, artillery, mortar, and unmanned air vehicles threats. Project NA6 is a congressional increase Project.

Work in this PE is complimentary to PE 0602303A (Missile Technology) and is fully coordinated with PE 0602618A (Ballistics Technology), PE 0602624A (Weapons and Munitions Technology), PE 0603003A (Aviation Advanced Technology), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology), PE 0603125A (Combating Terrorism Technology Development), PE 0603270A (Electronic Warfare Technology), PE 0603734A (Combat Engineering Systems), and PE 0708045A (Manufacturing Technology).

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

The work in this PE is performed by the Army Research, Development and Engineering Command (RDECOM).

Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army	Date: February 2018
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 3: *Advanced Technology Development (ATD)*	**R-1 Program Element (Number/Name)** PE 0603313A *I Missile and Rocket Advanced Technology*

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	52.190	62.850	64.396	-	64.396
Current President's Budget	113.683	62.850	61.132	-	61.132
Total Adjustments	61.493	0.000	-3.264	-	-3.264
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	63.500	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.982	-			
• Adjustments to Budget Years	-	-	-3.264	-	-3.264
• Other Adjustments 2	-0.025	-	-	-	-

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2017	FY 2018
Project: NA6: *Missile and Rocket Initiatives (CA)*		
Congressional Add: *Congressional Program Increase*	30.000	-
Congressional Add: *Cybersecurity and supply chain risk management research*	10.000	-
Congressional Add: *GPS-guided weapon performance improvement*	5.000	-
Congressional Add: *next generation close combat missile*	8.500	-
Congressional Add: *Armament systems concepts*	5.000	-
Congressional Add: *Armament systems integration*	5.000	-
Congressional Add Subtotals for Project: NA6	63.500	-
Congressional Add Totals for all Projects	63.500	-

Change Summary Explanation

FY17 Congressional increase in NA6 Missile and Rocket Initiatives

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603313A / *Missile and Rocket Advanced Technology*	Project (Number/Name) 206 / *Missile Simulation*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
206: *Missile Simulation*	-	2.342	2.476	2.488	-	2.488	2.573	2.623	2.678	2.731	0.000	17.911

A. Mission Description and Budget Item Justification

This Project matures and demonstrates advanced modeling and simulation technologies for missile design and analysis. Evaluation of missile technology by means of modeling and simulation provides a cost-effective method that supports missile maturation throughout the weapon system life cycle. This effort permits a reduction in the number of flight tests required for programs of record as well as improves the confidence of flight test readiness and probability of flight test success.

This Project support efforts in the Army Science and Technology Lethality portfolio.

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Missile Simulation	2.342	2.476	2.488
Description: This effort matures and demonstrates advanced analysis and high fidelity modeling and simulation technologies for advanced missiles and interceptor design and analysis. Evaluation of missile technology through modeling and simulation provides a cost-effective method to support missile maturation throughout the weapon system life cycle. This effort shortens component design timelines, reduces integration activities, enables a reduction of flight tests required for programs of record and improves the confidence of flight test readiness and the probability of flight test success.			
FY 2018 Plans: Mature the distributed architecture test bed for air defense weapon behavior exploration; provide a fast running model for use in fragmentation warhead design, insensitive munitions design, and lethality analysis; mature novel methods to address deficiencies in electro-optical (EO)/infrared (IR) real-time high-bandwidth sensor stimulation for Hardware in the loop; improve modeling and simulation capability to give more accurate lethality credit from blast effects and lower the cost of smaller missile systems; improve algorithms for forecasting air and missile tactical threat maneuvers, improve the missile threat maneuver forecaster, and mature algorithms for engagement tailoring and predicted intercept point (pip) management; mature cost-estimating tools for propulsion systems, software, modular systems, and for converting commercial off-the-shelf cost to military off-the-shelf cost .			
FY 2019 Plans: Will mature and demonstrate algorithms for forecasting air and missile tactical threat maneuvers, improve the missile threat maneuver forecaster, and will mature algorithms for engagement tailoring and predicted intercept point (pip) management and demonstrate capabilities in experiments to quantify engagement performance; will validate a System-of-Systems simulation which			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 206 / *Missile Simulation*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
provides a virtual context for research, development, and evaluation of advanced fire control and missile guidance algorithms; will mature and demonstrate cross cutting technologies that enable rapid and cost effective integration of new weapon and sensor technologies into complex system architectures; will expedite the engineering of complex software intensive systems by transforming models of interactive algorithmic behaviors into prototype software; will further mature cost-estimating tools for propulsion systems, software, modular systems, and for converting commercial off-the-shelf cost to military off-the-shelf cost; will establish behind armor debris prediction capabilities for multiple shaped charge materials and designs. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to inflation.			
Accomplishments/Planned Programs Subtotals	2.342	2.476	2.488

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 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603313A / *Missile and Rocket Advanced Technology*	Project (Number/Name) 263 / *Future Msl Tech Integr(FMTI)*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
263: *Future Msl Tech Integr(FMTI)*	-	22.387	34.725	39.212	-	39.212	30.163	31.320	38.654	39.441	0.000	235.902

A. Mission Description and Budget Item Justification

This Project matures, fabricates, and demonstrates advanced missile and interceptor technologies, such as seekers, guidance and controls, propulsion, and airframes. The project goal is to reduce the life-cycle costs and cost per kill of precision guided missiles and interceptors.

This Project support efforts in the Army Science and Technology Lethality and Ground Maneuver portfolios.

This Project matures technologies from Program Element (PE) 0602303A and directly supports systems managed by the Program Executive Officer for Missiles and Space. Work in this Project is in collaboration with PE 0602618A (Ballistics Technology), PE 0602624A (Weapons and Munitions Technologies), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0603005A (Combat Vehicle and Automotive Advanced Technology) and PE 0708045A (Manufacturing Technology).

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Low Cost Tactical Extended Range Missile	11.362	8.538	9.470
Description: This effort focuses on maturation, fabrication, and demonstration of technologies for low-cost precision fires missile capable of deep strike engagements. The aim is to provide extended range and expanded target set capability through advanced propulsion, new payload technology, and maintain effectiveness in Global Positioning System (GPS) challenged environments through new and novel navigation technologies. This effort supports the Army need for developing capability enablers in the area of Extended Range Precision Fires.			
FY 2018 Plans: Continue to mature and validate the long range fires missile systems simulation to reflect the emerging navigation, propulsion, and payload technologies. This system simulation is used to assess improved missile performance provided by these technologies and guide their continued development; continue to mature navigation system concept designs that provide alternate precision navigation solutions to GPS that leverage emerging navigation technologies; conduct preliminary design review of candidate technologies; perform lab and bench evaluations; assess system integration and performance evaluations through advanced simulation; continue to develop technologies to increase range to include motor technologies for long range precision fires and			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 263 / *Future Msl Tech Integr(FMTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
light-weight, thermally-protected airframe structures; conduct static motor testing to assess extended range performance; and perform modeling and simulation analysis of advanced materials for thermal management techniques. ***FY 2019 Plans:*** Will further mature and evaluate the long range fires missile components in the areas of navigation, propulsion, and payload technologies; will conduct system simulation to assess improved missile performance provided by these technologies and guide their continued development; will continue to develop and test navigation integration architectures and algorithms and refine navigations system design concepts based on updated program requirements and technology developments and begin testing of enhanced navigation system designs at the sub-system level; will conduct fabrication and testing of high strength fiber and high temperature matrix materials for the solid rocket motorcase and missile airframe to meet objective requirements. Will conduct analysis of results from Single Warhead for Area and Point Targets (SWAP) warhead testing to facilitate technology transition for multi-effects lethality for Fire Support applications. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Increase due to efforts to fabricate and assemble navigation and propulsion systems into a fully functional components and subsystems.			
Title: Active Protection System Interceptor Demonstration ***Description:*** This effort matures, integrates and demonstrates modular hard-kill Active Protection System (APS) technologies with the Hit Avoidance Architecture and APS Common Controller and matures modeling and simulation for system integration and demonstration. Specifically the hard-kill APS portion and modeling and simulation efforts will be addressed by the United States (U.S.) Army Aviation and Missile Research, Development and Engineering Center (AMRDEC). This effort supports the Army's APS program to mature and demonstrate APS technologies to reduce vehicle weight while reducing reliance on armor through the use of other means such as sensing, warning, hostile fire detection, and active countermeasures to achieve increased protection against current and emerging threats. This effort supports the development of an APS Common Architecture enabling adaptable APS solutions that can be integrated across Army vehicle platforms as required. This effort compliments work being accomplished under PE 0602601A/Project C05, PE 0602618A/Project H80, PE 0603004A/Project 232, PE 0603005A/Project 221, and PE 0603270A/Project K16. ***FY 2018 Plans:*** Improve modeling and simulation of APS countermeasure and fire control sensor alternatives; continue maturation and adaptation of a hard-kill countermeasure and fire control sensor to improve performance of survivability equipment. ***FY 2019 Plans:***	6.010	6.250	3.516

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 263 / *Future Msl Tech Integr(FMTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Will continue maturation and adaptation of a hard-kill countermeasure and fire control sensor to improve performance of survivability equipment; will improve modeling and simulation of APS countermeasure and fire control sensor alternatives. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to Modeling and Simulation work beginning to taper as work shifts focus to other technologies being developed for this effort.			
Title: Affordable Extended Range Precision Missile Demonstration ***Description:*** This effort focuses on the maturation, fabrication, integration, hardware-in-the-loop (HWIL) test, and flight demonstration of technology for an affordable discriminate extended range precision missile to include critical component technologies such as advanced propulsion, seekers, fire control, datalink, guidance and controls, and maneuverable airframes. Critical subsystem technology development transitions to 0603313A/263 Low Cost Extended Range Missile and 0603313A/704 Low Cost Extended Range Air Defense and to future fire support efforts for further maturation. ***FY 2018 Plans:*** Provide high fidelity simulations to improve lethal effects for maritime targets, seeker technology for terminal homing, a datalink for in-flight target updates using system-level trade studies; perform system level integration activities as the subcomponent technologies mature, and will begin integration of an Anti-Radiation Homing (ARH) capability into Guided Multiple Launch Rocket System (GMLRS) airframe. Critical system level attributes include: target detection, target acquisition, target classification, target tracking, target aim point selection, trajectory management, thermal characterization and lethality assessment. ***FY 2019 Plans:*** Will further develop radio frequency (RF) sensor technology, perform integration and will demonstration for multiple platforms to improve performance of missiles in an Anti-Access/Anti-Denial environment; critical attributes will include target detection, target acquisition, target classification, target tracking and target aim point selection. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to funding being transferred into new start, Multi-Domain Lethality Demonstration.	3.500	13.149	7.700
Title: Close Combat Weapons Technology ***Description:*** This effort addresses close combat weapon systems trade studies, and technology maturation and demonstration for a next generation close combat precision missile system for dismounted and mounted maneuver. ***FY 2018 Plans:*** Mature detailed system designs of critical propulsion and warhead components within severe constraints of size, weight, and power, and improve modeling and simulation of man-portable squad/vehicle crew weapons with fire from enclosure capability,	1.515	6.788	5.572

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 263 / *Future Msl Tech Integr(FMTI)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
overwhelming precision, and firefight-ending lethality; improve components and flight demonstrate a precision maneuverable missile in a relevant environment; provide an application-based fire control unit for reduced operator load; provide an affordable advanced imaging sensor and advanced autotracker features for increased precision; and provide a datalink for increase range and security, and provide a power system that increases endurance and decreases maintenance. ***FY 2019 Plans:*** Will mature optimized missile design with multi-effects lethal mechanism and integrate with expeditionary launcher for short to medium range precision strike with man-in-the-loop and loitering capability with lethal effects against hard and soft targets; will begin validation of the optimized design through lab and field demonstration. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Decrease due to work associated with flight demonstration of a precision maneuverable missile in a relevant environment being completed.			
Title: Multi-Domain Lethality Demonstration ***Description:*** This effort focuses on the maturation, fabrication, integration, Hardware-in-the-Loop (HWIL) development and test, and flight demonstration of critical missile technology that supports Multi-Domain Battle Concept/Cross-Domain Fires and Manned-Unmanned Teaming (MUM-T) System of Systems. The objective is to develop capability for missile systems to destroy enemy air defenses in the land and the maritime domains. This effort will develop and demonstrate appropriate sensor and payload component technologies for engaging and destroying maritime- and land-based air defense systems; integrate these component technologies into prototype missile hardware; and demonstrate hardware in a relevant flight environment. ***FY 2019 Plans:*** Will mature component development of 1) multi-mode seeker (anti-radiation homing and imaging infrared) for target classification/ discrimination and aim-point selection on critical target features and 2) warhead and fuze that maximizes lethal effects against multi-domain target sets; will conduct critical design review of component technologies; will perform test and evaluation of key enabling component technologies; will refine concepts for system integration; will mature modeling and simulation HWIL capabilities for testing and validation of integrated components. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** New start	-	-	12.954
Accomplishments/Planned Programs Subtotals	22.387	34.725	39.212

C. Other Program Funding Summary ($ in Millions)

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 263 / *Future Msl Tech Integr(FMTI)*

C. Other Program Funding Summary ($ in Millions)

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 3	R-1 Program Element (Number/Name) PE 0603313A / *Missile and Rocket Advanced Technology*	Project (Number/Name) 704 / *Advanced Missile Demo*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
704: *Advanced Missile Demo*	-	25.454	25.649	19.432	-	19.432	23.842	20.150	14.000	21.318	0.000	149.845

A. Mission Description and Budget Item Justification

This Project matures advanced missile system concepts and related hardware to enhance weapon system lethality, survivability, agility, versatility, deployability, and affordability for defense against future air and ground, armored and non-armored threats.

This Project support efforts in the Army Science and Technology Lethality portfolio.

Work in this Project is in collaboration with Program element (PE) 0602624A (Weapons and Munitions Technologies).

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

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Counter Rockets, Artillery, Mortars (RAM), Unmanned Aerial Systems (UAS), and Cruise Missile Tracking and Fire Control	7.729	7.497	2.359
Description: This effort matures and demonstrates system technology to provide 360 degree, near hemispherical coverage for tracking and intercept of UAS and/or Cruise Missile threats. This effort matures fire control methodology for engagement of threat UAS and/or Cruise Missile to generate firing solutions and determine interceptors available for an air defense mission. These efforts will be evaluated through Hardware-in-the-Loop (HWIL) experiments and multiple interceptor flights. Effort will also mature tactical launcher configurations and designs for alternative mission profiles. The technologies demonstrated will be applicable to the Indirect Fire Protection Capability (IFPC) and other Air and Missile Defense programs.			
FY 2018 Plans: Provide a surrogate demonstration launcher with integrated digital data link and inertial and network alignment technology and ground station components, and demonstrate its missile launch functionality through flight testing in a relevant environment; improve the integration of multi-mission radar input and detect data into a common tactical air picture and focused energy weapon cueing and fire control.			
FY 2019 Plans: Will mature and integrate digital data link ground station, inertial network alignment technology, and ground station components with a surrogate demonstration launcher for demonstration; will mature fire control methodology and software for air defense engagement planning and flight test demonstration planning. Will exploit data gathered from multi-mission radar and other			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 704 / *Advanced Missile Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
sensors in order to mature algorithm to autonomously detect, track, identify, rank and defeat counter-Unmanned Aerial System threat. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Work completed on the HWIL experiments and determination of available interceptors for an air defense mission.			
Title: Low-cost Extended Range Air Defense ***Description:*** This effort matures key technologies of a lower-cost interceptor system with a low- to medium-altitude, medium- to long-range capability. This effort will enable lower cost interceptor integration into a net-enabled Air and Missile Defense Task Force for the protection of high value assets. Technologies will address the defeat of air defense threats such as Unmanned Aerial System (UAS) and Cruise Missile threats with secondary capabilities against Large Caliber Rockets (LCR), Short Range Ballistic Missiles (SRBM), and Tactical Air-to-Surface Missiles (TASMS). ***FY 2018 Plans:*** Mature the low-cost air defense interceptor system with integrated solid rocket motor, digital data link, mission computer, power system, and flight termination system and demonstrate in ballistic flight testing; provide system analysis via hardware-in-the-loop (HWIL) flight simulation of the digital data link, mission computer, power system, navigation system, and control actuation system. ***FY 2019 Plans:*** Will further integrate the guidance electronics unit (GEU) and control system into HWIL for demonstration of the entire guidance, navigation, and control system. Will begin HWIL flight simulation, demonstrating GEU and control system performance with a false target generator and flight motion simulator using an emulated target with the correct radar signature and kinematics, and the emulated body motion and loading of simulated flight environments. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Completed work on HWIL compact range and target generator.	8.876	8.882	8.293
Title: Seeker and Guidance Technology for Air Defense ***Description:*** This effort focuses on the maturation, integration, and fabrication of seeker and guidance technologies supporting air defense missile systems. Technologies addressed enable the defeat of multiple air defense threats such as Rockets, Artillery, and Mortars, Unmanned Aerial System (UAS), and Cruise Missile threats with secondary capabilities against Large Caliber Rockets (LCR), Short Range Ballistic Missiles (SRBM), and Tactical Air-to-Surface Missiles (TASMS). ***FY 2018 Plans:*** Demonstrate active radio frequency (RF) seeker in hardware-in-the-loop flight simulation with guidance electronics unit (GEU) and in field testing in a relevant environment; continue maturation of guidance algorithms for accurate mid-course and terminal homing	7.263	7.267	6.785

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 704 / *Advanced Missile Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
guidance at extended ranges; provide flight control scripts for testing the speed, accuracy, and stability of the flight control system for use in future flight testing. ***FY 2019 Plans:*** Will continue maturation of the active RF seeker in the HWIL simulation facility; will refine seeker calibration, optimizing acquisition and track algorithms, optimizing seeker control algorithms, and debugging software; will continue maturation of guidance algorithms in hardware-in-the-loop (HWIL) for accurate mid-course and terminal homing guidance at extended ranges; will provide flight control scripts for testing the speed, accuracy, and stability of the flight control system for use in future flight testing. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Completed work on initial datalink HWIL testing.			
Title: Multi-Role Missile Demonstration ***Description:*** This effort focuses on the maturation, fabrication, integration, hardware-in-the-loop (HWIL) development and test, and flight demonstration of critical technology that supports an open systems architecture to enable modular designs of guided and unguided missiles for smaller and lighter missile options with multi-role engagement capabilities reducing the life cycle cost for missiles. Critical component technologies include advanced propulsion, payload (lethal and non-lethal), seekers, fire control, datalink, guidance and controls, and maneuverable airframes. This effort matures and demonstrates technology from PE 0602303A, Multi-Role Missile Technology. ***FY 2018 Plans:*** Demonstrate in a ground-launched flight test the guidance and control performance of the guided forward firing configuration and continue maturation of the component technology of the drop/glide configuration from PE 602303A (Multi-Role Missile Technology) which includes seeker, payload, guidance electronics unit, control actuation subsystem, propulsion subsystem, and subsystem interface bus. ***FY 2019 Plans:*** Will continue demonstration in a ground-launched flight test the guidance and control performance of the guided forward firing configuration and will continue maturation of the component technology of the drop/glide configuration from PE 602303A (Multi-Role Missile Technology) which includes seeker, payload, guidance electronics unit, control actuation subsystem, propulsion subsystem, and subsystem interface bus; will perform laboratory testing and simulation evaluations; will integrate modular missile technology subsystems; and will perform air dropped, unguided/ballistic flight tests to verify mechanical and electrical integrity of the drop/glide variant. ***FY 2018 to FY 2019 Increase/Decrease Statement:***	1.586	2.003	1.995

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** 704 / *Advanced Missile Demo*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Completed initial payload determination work.			
Accomplishments/Planned Programs Subtotals	25.454	25.649	19.432

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 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040 / 3					R-1 Program Element (Number/Name) PE 0603313A / *Missile and Rocket Advanced Technology*				Project (Number/Name) NA6 / *Missile and Rocket Initiatives (CA)*			
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
NA6: *Missile and Rocket Initiatives (CA)*	-	63.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	63.500

Note

Congressional increase

A. Mission Description and Budget Item Justification

Congressional Interest Item funding for Missile and Rocket advanced technology development.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018
Congressional Add: Congressional Program Increase ***FY 2017 Accomplishments:*** N/A	30.000	-
Congressional Add: Cybersecurity and supply chain risk management research ***FY 2017 Accomplishments:*** N/A	10.000	-
Congressional Add: GPS-guided weapon performance improvement ***FY 2017 Accomplishments:*** N/A	5.000	-
Congressional Add: next generation close combat missile ***FY 2017 Accomplishments:*** N/A	8.500	-
Congressional Add: Armament systems concepts ***FY 2017 Accomplishments:*** N/A	5.000	-
Congressional Add: Armament systems integration ***FY 2017 Accomplishments:*** N/A	5.000	-
Congressional Adds Subtotals	63.500	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 3	**R-1 Program Element (Number/Name)** PE 0603313A / *Missile and Rocket Advanced Technology*	**Project (Number/Name)** NA6 / *Missile and Rocket Initiatives (CA)*

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A