

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>
----------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	61.144	53.553	44.313	-	44.313	45.326	46.744	47.543	48.494	-	-
214: <i>Missile Technology</i>	-	45.144	45.053	44.313	-	44.313	45.326	46.744	47.543	48.494	-	-
G05: <i>MISSILE TECHNOLOGY INITIATIVES (CA)</i>	-	16.000	8.500	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-

A. Mission Description and Budget Item Justification

This Program Element (PE) designs, fabricates and evaluates advanced component technologies for tactical missiles, rockets, guided munitions, and their launch systems in order to increase lethality, precision, and effectiveness under adverse battlefield conditions while reducing system cost, size and weight. Major goals in Project 214 include enhancing the survivability of the munition, launch and fire control systems and increasing kill probabilities against diverse targets.

The work in this PE is complimentary to PE 0603313A (Missile and Rocket Advanced Technology) and fully coordinated with PE 0602307A (Advanced Weapons Technology), PE 0602618A (Ballistics Technology, Robotics Technology), PE 0602624A (Weapons and Munitions Technology), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0602782A (Command, Control, Communications Technology), and PE 0708045A (End Item Industrial Preparedness Activities).

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 Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	62.180	45.053	44.313	-	44.313
Current President's Budget	61.144	53.553	44.313	-	44.313
Total Adjustments	-1.036	8.500	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	8.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.036	-			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
-----------------------------------------------------------------------	----------------------------

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 2: Applied Research</i>	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>
----------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------

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

Project: G05: *MISSILE TECHNOLOGY INITIATIVES (CA)*

Congressional Add: *Program Increase*

	FY 2015	FY 2016
	16.000	8.500
Congressional Add Subtotals for Project: G05	16.000	8.500
Congressional Add Totals for all Projects	16.000	8.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>				Project (Number/Name) 214 / <i>Missile Technology</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
214: <i>Missile Technology</i>	-	45.144	45.053	44.313	-	44.313	45.326	46.744	47.543	48.494	-	-

A. Mission Description and Budget Item Justification

This project designs, fabricates, and evaluates missile and rocket component technologies that support demonstration of affordable, lightweight, highly lethal missiles and rockets. Major areas of research include: guidance, navigation, and controls; target acquisition systems; multi-spectral seekers; high-fidelity simulations; sustainment; aerodynamics and structures; launch systems, fire control technologies; payloads; and propulsion including research to help solve the insensitive munitions requirements. A theme embedded throughout the efforts in this project is smaller, lighter, and cheaper (SLC) missile technology to reduce the cost and logistical burden of precision munitions.

This project supports the Army Science and Technology Lethality and Command, Control, Communications and Intelligence (C3I) portfolios.

Major products of this Program element (PE) transition to PE 0603313A (Missile and Rocket Advanced Technology).

The cited work is consistent with the Director, Defense Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

Work in this project is performed by the Aviation and Missile Research, Development, and Engineering Center (AMRDEC), Huntsville, AL.

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

	FY 2015	FY 2016	FY 2017
Title: Smaller, Lighter, Cheaper Tactical Missile Technologies	12.704	-	-
Description: This effort designs and evaluates innovative smaller, lighter, and cheaper component technologies as well as system concepts to reduce ground tactical precision missile cost per kill and/or logistics burden to meet urban and emerging threats. These technologies transition to PE 0603313A for maturation.			
FY 2015 Accomplishments:			
Completed design, fabrication, and test of advanced composite housing for Javelin Light Weight Command Launch Unit (LW CLU); fabricated and tested a small, lightweight, low power inertial navigation sensor developed for robust man-portable close-combat targeting performance, and completed design of an increased accuracy modular inertial navigation sensor with reduced size, weight, and power (SWaP) and on-the-move capabilities (both targeting and navigation); fabricated and tested reduced SWaP, increased range acquisition sensor for Javelin LW CLU; integrated components into CLU housing and evaluated; continued trade studies of the next-generation close combat, precision weapon systems for performance against increased target sets; developed and tested advanced guidance and tracking technologies for improved target acquisition at increased range;			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
investigated, developed and evaluated applications for novel methods and tools to provide increased weapon precision and reduce target location error.				
<p>Title: Missile Seeker Technology</p> <p>Description: This effort focuses on the design, fabrication and evaluation of missile seekers, sensors, and software. The goal is to increase affordability and performance of missile seekers through improvement of algorithms, imaging, and thermal management.</p> <p>FY 2015 Accomplishments: Continued technology maturation of novel micro-cooler technologies for advanced infrared tactical seekers to increase range performance and improve size, weight, and power; tested ultra small and low cost semi-active laser seeker technology for improved flexibility and use on a variety of missile platforms including aviation and long range fires missiles; integrated programmable laser proximity sensor components and filter algorithms that will maintain operation in the presence of obscurants; completed the development of advanced technologies for affordable phased array sensors that enable all-weather operation of missile seekers and fire control.</p> <p>FY 2016 Plans: Fabricate, integrate, and test novel micro-cooler technologies, improving size, weight, power and reliability of advanced infrared tactical seekers; design and fabricate advanced ultra-small seeker components for integration into reduced-weight missiles, including aviation and long range fires missiles; develop and refine sensor and software algorithms to improve the detection and tracking of airborne threats.</p> <p>FY 2017 Plans: Will mature and assess capability of a compact, low cost radially omni-directional laser target detection device for the counter unmanned aerial systems (UAS) mission; will mature and evaluate a laser-based, shared-aperture system capable of detecting and tracking sensor payloads of threat UAS; will design a standard methodology and modeling capability to measure and track performance for passive sensors operating in the visible to infrared (IR) spectrum which will be applied to future tracker designs for improved and uniform performance; and will design a strap-down, low-cost, IR seeker with passive precision acquisition and tracking algorithms for both stationary and moving targets; the seeker concept utilizes unique targeting solution with user-defined targets from reconnaissance imagery for true fire-and-forget engagements against a broad target set and is applicable in global positioning system (GPS) denied environments. Seeker hardware and interface will be form factored for use on small guided munitions with modular open systems architectures.</p>		7.443	3.757	4.659
<p>Title: Missile Guidance, Navigation and Controls Technologies</p> <p>Description: This effort designs, fabricates and evaluates guidance, navigation, and control systems and software, as well as information and signal processing systems for rocket and missile applications. Goals of this effort include more affordable</p>		6.641	6.437	7.630

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>missile guidance; miniaturization of guidance electronics; maintaining performance in GPS denied environments; improved image processing; improved missile power systems; improved communication with ground and other systems; technologies to track and respond to threat and offensive munition swarms.</p> <p>FY 2015 Accomplishments: Developed, integrated and evaluated navigation technologies and algorithms capable of providing accuracy in GPS available and GPS denied/challenged environments to include: vision-aided, enhanced navigation-grade gyros, accelerometers, and unique inertial systems and GPS Anti-Jam /Anti-Spoofing systems; continued to develop, integrate and demonstrate state-of-the-art integration techniques for Commercial Off the Shelf (COTS) inertial sensors representing low cost, high accuracy navigation systems for extremely dynamic missile environments; developed, integrated, and demonstrated inertial technologies aimed at reducing size, weight, power and cost, while increasing accuracy.</p> <p>FY 2016 Plans: Develop initial navigation, position, and timing testbed architecture to accept input from multiple sensors to include inertial, visual, and GPS to refine robust navigation fusion algorithms that provide accuracy in GPS assisted/degraded/denied environments; continue development and evaluation of unique navigation technologies and algorithms aimed at reducing size, weight, power and cost, and dependence on the GPS while increasing or maintaining accuracy; design novel technology for high current, extended life power sources, to enable longer flight times and increased shelf life of small guided missiles.</p> <p>FY 2017 Plans: Will continue to mature inertial navigation systems with efforts focused on miniaturizing high performance inertial system components into significantly smaller packages for tactical missile applications while maintaining affordability; will design small, precision inertial sensors/accelerometers for fast, accurate north finding capability required to support target location systems/ missile initialization; will design novel battery technologies for high current batteries with high safety, low self-discharge, and long shelf life over wide range of temperature for long range small guided missiles; explore novel technology for augmentation of lithium polymer battery storage shelf life through integration of donor power storage technologies and subsystems to increase shelf life for small maneuvering missile applications; will design a guidance and control algorithm that can leverage the computing capabilities available in emerging technology and characterize its ability to improve missile performance; design roll trajectories that significantly improves the inertial-only navigation performance of missile navigation systems using the existing roll control channel of the missile system, thereby improving system performance in GPS challenged environments; will investigate current state-of-the-art additive manufacturing processes; design models and empirical data for multiple types of additive manufacturing materials and a materials database for applications to missile electronic systems; design processes to deposit electronic layers of radio frequency (RF) components in and within printed objects.</p>				
Title: Missile Fire Control Systems, Sustainment, Simulations, and Launchers		2.985	5.473	7.355

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
--------------------------------------------------------------------	----------------------------

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>
--------------------------------------------------	-------------------------------------------------------------------------------------	-----------------------------------------------------------------

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
-------------------------------------------------------------	----------------	----------------	----------------

<p>Description: This effort designs and evaluates fire control and tracking sensor technologies for area protection and air defense, technologies to increase missile useful life and reliability, advanced simulations to increase performance and reduce size, weight, and cost of missile systems, and launcher technology to deliver effects from air and ground platforms. Fire control radar effort is in coordination with PE 0602270A, Project 906 and PE 0603772A, Project 243.</p> <p>FY 2015 Accomplishments: Developed phased array radar technology for fire control systems and supporting thermal management, to include small, low-cost, lightweight designs using commercially-available components and commercial processes with integrated thermal structures to enable effective power levels; further developed target identification algorithms for integration with radar systems to increase targeting fidelity. Continued development of missile health monitoring unit to improve user interface to reduce sustainment costs and increases readiness; optimized health monitoring units for reduced cost, power, and volume and operation in dynamic vibration environments using micro-electromechanical systems (MEMS).</p> <p>FY 2016 Plans: Design and fabricate critical phased array radar technology components for a novel radar testbed to support air defense activities such as threat identification and assessment and high-value asset protection; design and fabricate radar testbed critical components such as transmit/receive modules; further mature target identification and classification algorithms focusing on integrating infrared imagery and development of ground target feature extraction increasing targeting fidelity and situational awareness; analyze novel copper wire bond material properties and design methodology to define qualification and acceptance for missile electronics reliability; develop initial radio frequency (RF) predictive methodologies to create valid and reliable threat UAS RF models facilitating advanced simulations for air defense activities.</p> <p>FY 2017 Plans: Will continue digital radar testbed establishment to develop methods to counter evolving threats and maintain overmatch capability; continue with fabrication and evaluation of transmit/receive element array for increased firm track ranges and higher update rates; generate an Interface Control Document (ICD) between the digital radar testbed antenna array front-end and the Future Fires Radar open systems architecture back-end processing software to ensure compatibility and utilization for air defense capabilities; will continue to provide target identification algorithms for targets of interest with multiple sensor input; will complete evaluation of reliability improvements of semiconductor devices using copper wire interconnects and identify key factors that mitigate negative reliability effects in target electronic devices; will investigate and design an open/modular architecture for future missile health monitoring units (HMUs) that address shortfalls/limitations in existing fielded capability and accommodate lower cost/quicker expansion of missile HMU capability; will continue to mature UAS modeling validation processes with establishment of RF predictive methodologies; will establish methods to forecast the behavior and uncertainty of air defense targets to fully leverage independent shooter capabilities in a multiple shooter air defense context; design air defense shooter engagement</p>			
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--	--	--

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
management algorithms informed by target forecasting algorithms; and will design new modeling and simulation techniques to improve the fidelity of complex scene generation utilized in the evaluation and analysis of infrared sensors and seekers.				
<p>Title: Missile Propulsion, Structures, Lethality, and Aerodynamic Technology</p> <p>Description: This effort designs, fabricates, evaluates and tests missile enabling technologies including: advanced missile propulsion with reduced launch signatures; increased lethality and range of lethality effects; improved structural integrity of light weight missile cases; and increased understanding of missile aerodynamics for improved performance. Missile Propulsion, Structures and Lethality efforts are in coordination with PE 0602618A, Project H80 and PE 0602624A, Project H28.</p> <p>FY 2015 Accomplishments: Tested novel propulsion structures to increase missile range and decrease time of flight of minimum signature propulsion systems; developed vibration-induced material degradation models of propulsion systems for stockpile reliability models to extend missile life; developed new methodologies that accurately characterize base flow predictions for complex aft bodies to improve aerodynamic predictability; continued modeling and analysis to determine the vulnerability of UASs to fragment impact and blast effects to enable the design of counter UAS missiles; continued to evaluate high performance compact warhead designs in collaboration with the Armaments Research, Development, and Engineering Center.</p> <p>FY 2016 Plans: Continue test and refinement of novel propulsion systems to increase missile range and reduce time of flight for extended range propulsion systems; design and conduct performance testing of structurally optimized missile components developed using additive manufacturing techniques for reduced weight and improved strength missile components; fabricate and perform system integration tests of lightweight warhead case technologies to provide reinforced structure defeat capability; investigate, scale up and test emerging disruptive energetic material from the Army Research Laboratory (ARL) in coordination with the Armaments Research Development and Engineering Center (ARDEC); design an experimental rocket motor intended to provide increased missile range via enhanced burning rate; create and evaluate novel aerodynamic structures to support extended range and maneuvering missile applications.</p> <p>FY 2017 Plans: Will continue to evaluate performance enhancement capability of physical burn rate augmentation for minimum signature propellant to improve volume efficiency of tactical missiles; will utilize emerging energetic ingredient technologies to provide minimum smoke propellants that offer improved ballistic performance, improved mechanical properties over expanded temperature extremes, and enhanced safety performance under battlefield threats; will design and characterize rocket nozzle and case insulation materials to improve insulation and erosive properties, and reduce cost for tactical missile applications; will investigate and evaluate laser welding and light weight coating technology to reduce cost and manufacturing time for composite structures; will design and validate logic/algorithms that integrate target classification and identification information available from multiple weapon platform sources; will use target classification</p>		5.653	6.069	5.658

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
information to construct fuze commands for tailorable effects payloads that optimize target defeat, minimize collateral effects, and facilitate multi-use, tailorable effects weapons; and will perform concept characterization and integration experimentation of brassboard designs of advanced shaped charge, explosively formed penetrators, and fragmentation technologies established in collaboration with ARDEC and ARL to enable a family of future munitions and missiles to enhance warfighter lethality and provide overmatch for the future battlefield.				
<p>Title: Multi-Role Missile Technology</p> <p>Description: This effort evaluates critical technology and designs component for future affordable rockets and missiles to provide overwhelming defeat of conventional and asymmetrical threats in all environments. Successful technologies are matured and demonstrated in PE 0603313A, Project 263/704.</p> <p>FY 2015 Accomplishments: Utilized data fusion to incorporate new navigation technologies into missile navigation algorithms aiding GPS and inertial navigation for operation in GPS-denied environments; evaluated propulsion energy management technologies, and performed trade studies of new payload technologies for long-range missiles; conducted component performance trade studies; continued laboratory testing of component designs for lightweight multi-role modular missiles that can be integrated onto various sizes of unmanned aviation systems as well as manned rotary wing platforms; investigated alternate component technologies for seeker and guidance electronic unit design cost reduction and with no performance degradation; evaluated and assessed new alternate lightweight/high strength materials to increase weapon survivability and reduce soldier weight burden.</p> <p>FY 2016 Plans: Refine detailed trade studies identifying critical technologies for next-generation close combat, precision missile systems enabling increased range for a man portable system; develop and evaluate 3-dimensional precision targeting software for Soldier, maneuver and fire support weapon applications; perform requirements definition, component trade studies, and preliminary component designs for a precision, maneuverable missile to meet emerging mission needs; design and develop critical components (hardware and software) that support an open systems architecture to enable modular designs of guided and unguided missiles.</p> <p>FY 2017 Plans: Will evolve precision guided missile concepts based on emerging requirements; advance research and design missile technologies such as guidance and tracker algorithms; design novel hardware-in-the-loop (HWIL) capabilities through algorithm establishment and unique modeling and simulation test equipment required to support open system architecture concepts; continue to inform and evaluate detailed designs and identify critical components required; and will integrate modular missile technology components and open system architecture into subsystems and verify subsystem performance in bench-level and laboratory environments.</p>		3.809	8.543	6.099
Title: Large Long Range Future Fires		2.926	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016		
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: This effort evaluates and provides technologies and performs necessary trade studies to provide the key components for maturation and demonstration for a large long range future fires missile in PE 0603313A Project 263.</p> <p>FY 2015 Accomplishments: Continued to update propulsion models and conduct analyses of large long-range fires propulsion system requirements; designed, fabricated, and performed initial testing of propulsion sub-systems that will enable Large Long Range Future Fires capability.</p>				
<p>Title: Air Defense Missile Technologies (formerly Counter Unmanned Aerial Systems and Counter Cruise Missile)</p> <p>Description: This effort evaluates and provides technologies and performs necessary trade studies to provide the key components for maturation and demonstration of air defense missiles to counter threats such as unmanned aerial systems (UAS) and cruise missile systems. This work supports efforts in PE 0603313A, Projects 263 & 704.</p> <p>FY 2015 Accomplishments: Evaluated and analyzed component technologies to support the counter UAS mission and expand efforts to include tactical level air threats with 360 degree coverage. Began component level modeling and simulation and evaluated system architecture concepts.</p> <p>FY 2016 Plans: Continue development of critical interceptor technologies and components such as seeker, control system, mission computer, power system, and propulsion; design and implement software application algorithms for maneuver and fire support weapon targeting including expanded sensor inputs, threat flight path predictions, and calculated interceptor flight time for counter UAS missions.</p> <p>FY 2017 Plans: Will continue establishment, fabrication and evaluation of critical air defense interceptor technologies and components: control system, mission computer, and power system; and will continue to design and implement software application algorithms for maneuver and fire support weapon targeting.</p>		2.983	6.188	5.176
<p>Title: Affordable Precision Missile Enabling Technology</p> <p>Description: This effort focuses on the studies, design, establishment, fabrication, and evaluation of components and subsystems critical to produce affordable discriminate extended range precision missiles. Critical component technologies include: advanced propulsion, seekers/sensors, fire control, datalink, guidance, navigation and controls, and airframes. These technologies transition to PE 0603313A, Project 263 for maturation.</p> <p>FY 2016 Plans:</p>		-	2.000	3.610

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army	Date: February 2016
--------------------------------------------------------------------	----------------------------

Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>	Project (Number/Name) 214 / <i>Missile Technology</i>
--------------------------------------------------	-------------------------------------------------------------------------------------	-----------------------------------------------------------------

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Conduct component/subsystem trade studies to determine subsystem requirements for an affordable discriminate extended range precision missile; begin design of critical component technologies identified through subsystem trade studies.</p> <p>FY 2017 Plans: Will continue component/subsystem trade studies and refine and assess initial designs of critical component technologies to support the design of affordable discriminate extended range precision missile concepts. Critical component technologies include: advanced propulsion, seekers/sensors, fire control, datalink, guidance, navigation and controls, and maneuverable airframes, and platform integration.</p>			
<p>Title: Long Range Fires Enabling Technology</p> <p>Description: This effort focuses on performing the necessary trade studies, and designing, establishing, fabricating and evaluating critical component technologies needed to support a long range fires capability. These technologies transition to PE 0603313A Project 263 for maturation.</p> <p>FY 2016 Plans: Design and begin fabrication of advanced solid rocket motors to increase range for long range fires missiles; explore novel navigation techniques specific to the timelines required for long range fires missiles in GPS denied environments; integrate and conduct dynamic tests of a blast/fragmentation warhead and hardened multi-point fuze designed to produce effectiveness against both point and area targets, providing a single warhead variant for long range fires applications; conduct full scale tests against select military operations and urban terrain targets to characterize lethality.</p> <p>FY 2017 Plans: Will continue to investigate and assess emerging navigation technologies and techniques; design navigation system integration architectures and algorithms capable of integrating emerging navigation technologies into an alternate precision navigation solution; and will continue performance evaluations of blast/fragmentation warhead and hardened multi-point fuze designed to produce effectiveness against both point and area targets.</p>	-	6.586	4.126
Accomplishments/Planned Programs Subtotals	45.144	45.053	44.313

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

N/A

Remarks

D. Acquisition Strategy

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
2040 / 2	PE 0602303A / <i>Missile Technology</i>	214 / <i>Missile Technology</i>

E. Performance Metrics

N/A

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army **Date:** February 2016

Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602303A / <i>Missile Technology</i>				Project (Number/Name) G05 / <i>MISSILE TECHNOLOGY INITIATIVES (CA)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
G05: <i>MISSILE TECHNOLOGY INITIATIVES (CA)</i>	-	16.000	8.500	0.000	-	0.000	0.000	0.000	0.000	0.000	-	-

A. Mission Description and Budget Item Justification

This is a Congressional Interest Item.

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

	FY 2015	FY 2016
<i>Congressional Add:</i> Program Increase	16.000	8.500
<i>FY 2015 Accomplishments:</i> Program increase for missile technology research		
<i>FY 2016 Plans:</i> Program increase for missile technology research		
Congressional Adds Subtotals	16.000	8.500

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A