

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>
--	--

COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	42.604	30.912	28.036	-	28.036	26.753	18.724	14.894	18.615	Continuing	Continuing
241: <i>Nstd Combined Arms</i>	-	42.604	30.912	28.036	-	28.036	26.753	18.724	14.894	18.615	Continuing	Continuing

A. Mission Description and Budget Item Justification

Program Element funds development of Non-System Training Devices to support force-on-force training at the Combat Training Centers (CTC), general military training, and training on more than one item/system, as compared with system devices which are developed in support of a specific item/weapon system. Army training devices and training simulations contribute to the modernization of the forces by enabling readiness and strengthening combat effectiveness through realistic training solutions for the Warfighter. Training devices maximize the transfer of knowledge, skills, and experience from the training situation to a combat situation. Force-on-force training at the National Training Center (NTC), Ft. Irwin, CA; Joint Readiness Training Center (JRTC), Ft. Polk, LA, and Joint Multinational Readiness Center (JMRC), formerly the Combat Maneuver Training Center (CMTC), Hohenfels, Germany; and battle staff training in Battle Command Training Program (BCTP) provide increased combat readiness through realistic collective training in low, mid, and high intensity scenarios. Project 241, Non-System Training Devices-Combined Arms, develops simulation training devices for Army-wide use, including the CTCs.

FY 2021 Project 241 funds significant development efforts in support of U.S. Army Training and Readiness on the Combat Training Center Instrumentation Systems (CTC-IS), Instrumentable-Multiple Integrated Laser Engagement System (I-MILES), Home Station Instrumentation Training System (HITS), Common Training Instrumentation Architecture (CTIA), OPFOR Integrated Air Defense System (IADS), Digital Range Training System (DRTS), Target Modernization, Medical Simulation Training Center (MSTC), Basic Electronics Maintenance Trainer (BEMT), Live, Virtual, Constructive Integrating Architecture (LVC-IA), Combat Training Center Live Fire Modernization (CTC Live Fire Mod) new start, and OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) new start. FY 2020 funding for Suicide Prevention is realigned to PE 0605013A project FL9.

FY 2020 funding for Soldier/Squad Virtual Trainer Program (S/SVT) is realigned to PE 0604121A, Project SV1.

On 21 April 2019, the Future Army System of Integrated Targets (FASIT) Capability Production Document was approved. After the FASIT program is formally established, it will subsume the following programs: Combat Training Center Live Fire Modernization (CTC Live Fire Mod), Target Modernization, and Army Targetry Systems (ATS).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army **Date:** February 2020

Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>
--	--

B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	44.381	27.412	26.349	-	26.349
Current President's Budget	42.604	30.912	28.036	-	28.036
Total Adjustments	-1.777	3.500	1.687	-	1.687
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	3.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.777	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	1.687	-	1.687

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

Project: 241: *Nstd Combined Arms*

Congressional Add: *Radio Frequency Emitters*

	FY 2019	FY 2020
	-	3.411
Congressional Add Subtotals for Project: 241	-	3.411
Congressional Add Totals for all Projects	-	3.411

Change Summary Explanation

FY 2021 Project 241 funds increased due to the following:

- \$2.500 Million for Combat Training Center Live Fire Modernization new start
- \$.201 Million for OPFOR Attack Aircraft Shoot-back Capability new start
- (\$1.014) Million for minor decreases to the remaining programs

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 5					R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>				Project (Number/Name) 241 / <i>Nstd Combined Arms</i>			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
241: <i>Nstd Combined Arms</i>	-	42.604	30.912	28.036	-	28.036	26.753	18.724	14.894	18.615	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Common Training Instrumentation Architecture (CTIA) program is the foundation architecture of the Live Training Transformation Family of Training Systems (LT2-FTS). The program contains critical core product-line architecture which provides commonality across training instrumentation systems and interoperability across Live, Virtual, Constructive Integrated Training Environment (LVC-ITE) and joint training systems. CTIA includes Army owned software components, architecture services, standards, protocols and governance used by domain-specific Live Training Transformation (LT2) and Live Training Systems (LTS) to include instrumented Force-On-Force (FOF) and Force-On-Target (FOT) training requirements. The CTIA also provides Post Deployment Software Support (PDSS) and technology refresh for the LT2 family of LTS supporting over 22 live instrumented training products which are fielded at over 200 CONUS and OCONUS sites across the Army.

Combat Training Center Instrumentation System (CTC-IS) funds the continued development of the existing Instrumentation Systems (IS) at the National Training Center (NTC), Joint Readiness Training Center (JRTC) and Joint Multinational Readiness Center (JMRC). CTC-IS funds the continued development of the Range Communication System at the NTC and JRTC, to provide high-fidelity live, virtual, and constructive brigade training rotations which prepare Brigade Combat Teams (BCTs), Joint partners, and supporting units to deploy in support of the Army Sustainable Readiness Model (SRM). The CTCs primary goal is to develop agile and adaptive leaders at the tactical, operational and strategic levels while providing BCTs the core training necessary to conduct decisive action in a dynamic operating environment.

The Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) program provides realistic, real-time casualty effects for force-on-force tactical engagement training scenarios. Its ability to integrate into training instrumentation systems provides for high fidelity combined arms combat exercises supporting the 39th Chief of the Staff of the Army's #1 priority of "Readiness" and the closely aligns with the Modernization priority of Soldier Lethality. I-MILES is required for use at Home Stations, the Combat Training Centers (CTCs) and in theater of operations to meet force-on-force training requirements. I-MILES program funding provides for the Development and Integration of new vehicle and dismount weapon systems meeting the Common Operating Environment (COE) requirements, as well as embedded Tactical Engagement Simulation (TES) development. This includes development efforts of the Live Training Engagement Composition (LTEC), increasing simulation by updating the Probability of Kill (Pk) tables for increased training realism and improved integration on new weapon platforms (i.e. Joint Light Tactical Vehicle (JLTV), Armored Multi-Purpose Vehicle (AMPV), Next Generation Combat vehicle, M4A2 plus Rifle and Stryker Engineering Change Proposal (ECP) with 30mm Gun).

The Home Station Instrumentation Training System (HITS) currently provides a high-fidelity deployable instrumented training capability to support platoon thru battalion ground based Soldiers and vehicles in Force-on-Force Training. HITS tracks location of soldiers and vehicles and simulates weapons' effects and engagements, allowing units to "Train as they Fight" against live opponents. HITS provides accurate feedback to training units. HITS consists of light deployable components that can be rapidly assembled/disassembled and transported to support deployed training. HITS is a member of the Live Training Transformation (LT2) product line of training systems implementing hardware and software reuse with other Instrumentation Systems (IS). HITS provides the only Live training component for the large scale Live-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>Virtual-Constructive (LVC) military training exercises. HITS begins US Army aviation vehicle integration with Home Station instrumentation to cover comprehensive training engagements between ground and air forces.</p> <p>The Medical Simulation Training Center (MSTC) provides realistic medical training to both medical and non-medical Soldiers in the Active, Reserve, and National Guard. MSTCs provide hands-on instruction on the latest battlefield trauma and critical care techniques based on Army Medical Department (AMEDD) approved performance oriented Program of Instruction (POI). Medical treatment validation exercises simulate the high stress of performing medical interventions in combat. MSTC supports Unit Medical Readiness by validating Combat Medic (68W) Emergency Medical Technician (EMT) biennial recertification requirements and provides Combat Lifesaver (CLS) training to non-medical Soldiers.</p> <p>The Basic Electronics Maintenance Trainer (BEMT) provides the essential modernized electronic system maintenance training capability for the Army, Army National Guard, and the Army Reserve to achieve Military Occupational Specialty-Qualification (MOS-Q) for 40 Military Occupational Specialties (MOS) at 24 Active, National Guard, and Army Reserve camps, posts, and stations. Soldiers utilizing the BEMT system receive highly realistic training using scenarios which require performing basic electronic tasks in a virtual environment including tests, diagnosis, and repair while saving institutions significant expenses over live training alternatives. The BEMT consists of an Instructor Operator Station (IOS), Student Training Station(s) (STS), associated test equipment, COTS computer, electronics console(s), supporting experiment cards, soldering station, and content server as applicable.</p> <p>The Live, Virtual, Constructive Integrating Architecture (LVC-IA) provides a net-centric linkage that collects, retrieves and exchanges data among LVC Training Aids, Devices, Simulations, and Simulators (TADSS) to include: Aviation Combined Arms Tactical Trainer (AVCATT), Close Combat Tactical Trainer (CCTT), Games For Training (GFT), Home Station Instrumentation Training System (HITS), Joint Land Component Constructive Training Capability (JLCCTC) and Synthetic Environment Core (SE Core) and Mission Command Systems. The LVC-IA defines "how" information is exchanged among the different LVC domains and the Mission Command Systems. The LVC-IA provides enterprise level tools for exercise control, after action review, and system information assurance. It develops hardware and software to interface the different Live, Virtual, Constructive and Gaming communication protocols and to provide a correlated common operating picture for the training audience on their organic Mission Command equipment. The integration of the LVC TADSS with the Mission Command equipment will enable larger and more robust training events, to better prepare U.S. Soldiers for their missions at an overall reduced cost. The end-state goal is to enable an LVC Integrated Training Environment that can replicate Operational Environments in a cost effective manner to provide a high level of value-added training and mission rehearsal opportunities to Army Commanders and their Soldiers. In FY 2019, the LVC-IA program continued design and developmental activities for Version 4 which allowed for Web-based optimization; inclusion of new simulations to the architecture; and concurrency with core system TADSS and Army Mission Command Systems and will continue in FY 2020 through FY 2021. FY 2021 request will continue Version 4 developmental and integration activities (Web-based optimization and Synthetic Training Environment (STE) compatibility), and will continue concurrency with mission command systems.</p> <p>The Target Modernization program provides a single standard/solution in support of all non-digital live fire ranges throughout the Army. Target Modernization provides live fire target systems on U.S. Army training ranges, by enhancing training realism, improve Soldiers, Leader, and Team Performance, and developing agile and adaptive leaders. The Target Modernization program provides a common open architectural framework, standards, specifications, and interfaces for live fire target devices, a common target control system for all range types, and innovative technologies to enhance training realism and reduce life cycle costs on the ranges.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>Combat Training Center Live Fire Modernization (CTC Live Fire Mod) provides Future Army System of Integrated Targets (FASIT) qualified live-fire capable targets which includes Stationary Armor Targets (SAT) with accompanying Battlefield Effects Simulators (BES), Stationary Infantry Targets (SIT), Human Urban Targets (HUT), Double-Arm SITs, Moving Infantry Targets (MIT), and non-FASIT qualified Aviation 3-D and Unattended Aerial Systems (UAS) targets. These provide a capability for the CTCs to support the transition from Mission Rehearsal Exercise/Situational Training Exercise (MRE/ST) rotations to Unified Land Operations (ULO) against a hybrid threat.</p> <p>The Army identified an operational gap in the training strategy for the OPFOR Integrated Air Defense System (IADS). It is a collection of enemy weapons systems that engages Army aviation assets. Training Aircraft Survivability Equipment (ASE) Simulation Suite (TASS) is a live training system consisting of aircraft components and ground emitters that replicates current and emerging enemy Air Defense systems. Its fidelity supports individual pilot training as well as the collective training requirements of the Brigade Combat Team to fully plan, prepare, execute and react against an enemy air defense weapons at the Combat Training Centers (CTC).</p> <p>The Digital Range Training System (DRTS) provides modern digital technology ranges capable of training, evaluating and stressing today's Soldiers and their equipment. DRTS systems score various weapons and records data and video for utilization in an After Action Review (AAR). DRTS supports qualification gunnery tables for Armor (Abrams), Infantry (Bradley & Stryker mounted & dismounted) and Aviation platforms. The four standard training ranges identified utilize all available combat systems capabilities and digitally integrate them to manage all forces undergoing individual and collective live-fire training and qualification: Digital Multi-Purpose Range Complex (DMPRC) supports all gunnery tables and Combined Arms Live fire Exercise (CALFEX) for Abrams, Bradley, and limited Aviation; Digital Multi-Purpose Training Range (DMPTR) supports crew and section qualification for Armor and Infantry; Battle Area Complex (BAX) supports Stryker gunnery tables plus infantry-centric Platoon / Company CALFEX; Digital Air Ground Integration Range (DAGIR) supports all gunnery tables and CALFEX for Abrams, Bradley, and Aviation platforms (including diving fire).</p> <p>OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) provides the CTC OPFOR Light Utility Helicopter (LUH) synthetic shoot-back kits with capability for missiles, rockets, and cannon that allows OPFOR aircraft to engage other air and ground TESS-equipped targets, and display engagement pairings on CTC-IS workstations. The OPFOR LUH offensive capability creates a simulated weapons capability for the OPFOR using day and thermal cameras for target detection and MILES laser to "shoot" BLUFOR players at the CTCs.</p> <p>OPFOR Surrogate Wheeled Vehicles (OSWV) provides a collection of wheeled vehicles, used as training aids to portray threat vehicles including tactical vehicles, technical vehicles, and Civilian on the Battlefield vehicles (COB-V). The program supports the CTC OPFOR/COE Pillar capability through technical vehicles, unique VISMODs, and COB-Vs. This capability provides for an accurate replication of OPFOR and COB-Vs environment that rotational units must train against.</p> <p>FY 2021 Project 241 funds significant development efforts in support of U.S. Army Training and Readiness on the Combat Training Center Instrumentation Systems (CTC-IS), Instrumentable-Multiple Integrated Laser Engagement System (I-MILES), Home Station Instrumentation Training System (HITS), Common Training Instrumentation Architecture (CTIA), OPFOR Integrated Air Defense System (IADS), Digital Range Training System (DRTS), Target Modernization, Medical Simulation Training Center (MSTC), Basic Electronics Maintenance Trainer (BEMT), Live, Virtual, Constructive Integrating Architecture (LVC-IA), Combat Training Center Live Fire Modernization (CTC Live Fire Mod) new start, and OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) new start. FY 2020 funding for Suicide Prevention is realigned to PE 0605013A project FL9.</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

FY 2020 funding for Soldier/Squad Virtual Trainer Program (S/SVT) is realigned to PE 0604121A, Project SV1.

On 21 April 2019, the Future Army System of Integrated Targets (FASIT) Capability Production Document was approved. After the FASIT program is formally established, it will subsume the following programs: Combat Training Center Live Fire Modernization (CTC Live Fire Mod), Target Modernization, and Army Targetry Systems (ATS).

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Common Training Instrumentation Architecture (CTIA) program.</p> <p>Description: Continue EMD phase contract activities for the CTIA program to provide common architecture capabilities.</p> <p>FY 2020 Plans: Continued development of CTIA to provide the common architecture capabilities that are essential for development, fielding, technology and capability insertion for 22 live training systems at 200+ training locations worldwide, to include the Combat Training Centers-Instrumentation System utilized at the National Training Center, the Joint Readiness Training Center, and at the Joint Multinational Readiness Center; the Home Station Instrumentation System; the Digital Ranges Training System, and the Live, Virtual, Constructive-Integrated Training Environment interoperability initiatives.</p> <p>FY 2021 Plans: FY 2021 Base RDTE dollars in the amount of \$2.508 million will fund the continued development of CTIA to provide the common architecture capabilities that are essential for development, fielding, technology and capability insertion for 22 live training systems at 200+ training locations worldwide, to include the Combat Training Centers-Instrumentation System utilized at the National Training Center, the Joint Readiness Training Center, and at the Joint Multinational Readiness Center; the Home Station Instrumentation System; the Digital Ranges Training System, and the Live, Virtual, Constructive-Integrated Training Environment interoperability initiatives.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease due to estimated cost for development.</p>	1.876	2.438	2.508
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Combat Training Center Instrumentation System (CTC-IS).</p> <p>Description: Continue EMD phase contract activities for the CTC-IS.</p> <p>FY 2020 Plans: FY 2020 Base RDTE dollars in the amount of \$.427 million will fund post deployment software support to reintegrate CBRNE (Chemical, Biological, Radiological, Nuclear and Explosives) training at the CTCs. The effort will integrate the Joint Effects Model</p>	3.516	4.182	3.514

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>into the CTC-IS. The effort will use the Army's Integrated Sensor Architecture that will stimulate CBRNE sensors. The results will be available in the CTC-IS for After Action Review (AAR).</p> <p>FY 2020 Base RDTE dollars in the amount of \$1.677 million will fund the Life Cycle Management (LCM) of Live Training Family of Systems, developing the architecture framework for future Life Cycle Efforts for the Hardware Product Line Framework.</p> <p>FY 2020 Base RDTE dollars in the amount of \$.666 million will fund an analysis of NTC Western Training Area (WTA) to provide information to determine path forward to expanded coverage area.</p> <p>FY 2020 Base RDTE dollars in the amount of \$1.500 million will fund the SINGARS replacement study; identify alternate means to collect tactical voice communications at the Combat Training Centers, utilized for ARR purposes, study is intended to identify alternate solutions which are cheaper to purchase and easier to maintain providing life-cycle cost saving across the CTC.</p> <p>FY 2021 Plans:</p> <p>FY 2021 Base RDTE dollars in the amount of \$.329 million will fund post deployment software support to integrate sensor, GPS and radar jamming and UAS counter measures into the training at the CTCs. The effort will stimulate and simulate GPS and radar jamming and UAS counter measures in Brigade Combat Team Force-on-Force training. The results will be available in the CTC-IS for After Action Review (AAR).</p> <p>FY 2021 Base RDTE dollars in the amount of \$.750 million will fund the development of a Digital Tactical Monitoring (DTM) solution for the CTCs. The DTM capability will allow Combat Training Center Observers Controllers Trainers(OCTs) to monitor, collect, and record Rotational Training Unit (RTU) C4ISR communications and provide performance feedback during Combat Training Center Brigade Combat Team(BCT)FoF/FoT training events, this is valuable feedback in the AAR process increasing BCT readiness.</p> <p>FY 2021 Base RDTE dollars in the amount of \$1.941 million will fund the Life Cycle Management (LCM) of Live Training Family of Systems, developing the architecture framework for future Life Cycle Efforts for the Hardware Product Line Framework.</p> <p>FY 2021 Base RDTE dollars in the amount of \$.494 million will fund the JOC DESIGN ANALYSIS study to determine the layout of the JRTC-IS systems/subsystem within the new JOC. The study will also look at current and future technologies for implementing the installation of the JRTC-IS systems/subsystems in the new JOC to ensure the architecture remains current with the latest technology improvements and effectiveness and to improve the life cycle footprint.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease due to estimated cost for development.</p>				
Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Instrumentable-Multiple Integrated Laser Engagement System (I-MILES).		1.751	2.542	2.802

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>Description: EMD phase contract activities for the I-MILES program.</p> <p>FY 2020 Plans: RDTE funding will analyze, develop, test and implement the Live Training Engagement Composition (LTEC) through Post Deployment Software Support efforts. Funding will ensure that baseline relevancy is maintained. Funding will also ensure that there is development and integration of new functionality to maintain concurrency.</p> <p>FY 2021 Plans: RDTE funding will analyze, develop, test and implement the Live Training Engagement Composition (LTEC) through Post Deployment Software Support efforts. Funding will ensure that baseline relevancy is maintained. Funding will also ensure that there is development and integration of new functionality to maintain concurrency.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: FY 2021 increase is due to the additional requirement for Electronic Proving Ground testing.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Home Station Instrumentation Training System (HITS) program.</p> <p>Description: EMD phase contract activities for the HITS program.</p> <p>FY 2020 Plans: HITS will begin US Army aviation vehicle integration with Home Station instrumentation to provide comprehensive training engagements between ground and air forces. Efforts will add aviation specific interfaces, visual indicators, and required messaging for HITS and Live, Virtual and Constructive Integrating Architecture (LVC-IA) interoperability. LVC-IA and HITS encompass simulated combined arms, collective training. This will create a cloud based HITS After Action Review capability so that distributed unit leaders can readily have on demand and point-of-need access. The cloud based access will allow the unit leader to reinforce training of over 1,000 Soldiers after training with HITS.</p> <p>FY 2021 Plans: HITS will continue US Army aviation vehicle integration with Home Station instrumentation to provide comprehensive training engagements between ground and air forces. Efforts will add aviation specific interfaces, visual indicators, and required messaging for HITS and Live, Virtual and Constructive Integrating Architecture (LVC-IA) interoperability. LVC-IA and HITS encompass simulated combined arms, collective training. This will create a cloud based HITS After Action Review capability so that distributed unit leaders can readily have on demand and point-of-need access. The cloud based access will allow the unit leader to reinforce training of over 1,000 Soldiers after training with HITS.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p>		0.725	3.551	1.879

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Estimated cost for development.				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Medical Simulation Training Center (MSTC).</p> <p>Description: EMD phase contract activities for the MSTC program.</p> <p>FY 2020 Plans: Complete enhancement of the Instructor Support System (ISS) by improving the combat training environments to enhance the Soldier's training experience through more realistic training scenarios.</p> <p>FY 2021 Plans: Instructor Support System (ISS) combat training scenarios will be improved in a Synthetic Training Environment (STE) via Virtual Reality and Reconfigurable Virtual Trainers.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease due to estimated cost of development.</p>		-	0.593	0.448
<p>Title: Soldier/Squad Virtual Trainer Program (S/SVT) Engineering, Support, Test & Evaluation</p> <p>Description: Engineering, support, and any related test and evaluation for the development of the S/SVT Program.</p>		5.534	-	-
<p>Title: Live, Virtual, Constructive Integrating Architecture (LVC-IA) Engineering and Manufacturing Development (EMD) phase contract activity.</p> <p>Description: Continue EMD phase contract activities for the LVC-IA program.</p> <p>FY 2020 Plans: Live, Virtual, and Constructive-Integrating Architecture (LVC-IA) program will continue system development, integration and demonstration of the LVC-IA Version 4 capability which includes the developmental activities for Web-based optimization, Synthetic Training Environment (STE) compatibility, and concurrency with core system TADSS and Army Mission Command Systems.</p> <p>FY 2021 Plans: Live, Virtual, and Constructive-Integrating Architecture (LVC-IA) program will continue system development, integration and demonstration of the LVC-IA Version 4 capability which includes the developmental activities for Web-based optimization, Synthetic Training Environment (STE) compatibility, and concurrency with core system TADSS and Army Mission Command Systems.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p>		2.775	3.527	4.345

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Increase is due to connectivity to Synthetic Training Environment (STE) and External System STE Integration requirements.				
<p>Title: Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program Government System Test and Evaluation.</p> <p>Description: Government System Test and Evaluation for the LVC-IA Program.</p> <p>FY 2020 Plans: LVC-IA will continue Federation Integration and System Measurement of Performance (SMP) events, and commence Functional Verification, Test Readiness Review (TRR) and Government Acceptance Testing for Version 4. Additionally, LVC-IA will continue integration testing and evaluation activities in support of LVC-IA interoperability with TADSS and other Mission Command Systems.</p> <p>FY 2021 Plans: LVC-IA will continue Integration and System Measurement of Performance (SMP) events, and continue Functional Verification, Test Readiness Review (TRR) and Government Acceptance Testing for Version 4. Additionally, LVC-IA will continue integration testing and evaluation activities in support of LVC-IA interoperability with TADSS and other Mission Command Systems.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase is due to additional systems test and evaluation requirement for STE.</p>		1.619	1.130	1.497
<p>Title: Government Program Management for the Live, Virtual, Constructive Integrating Architecture (LVC-IA) Program.</p> <p>Description: Government Program Management for the LVC-IA Program.</p> <p>FY 2020 Plans: Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p> <p>FY 2021 Plans: Will provide program management, engineering and technical oversight, contract support, and travel for the LVC-IA Program.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Decrease is due to completing final verification efforts.</p>		0.399	0.162	0.153
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Combat Training Center Live Fire Modernization (CTC Live Fire Mod)</p> <p>Description: Combat Training Center Live Fire Modernization (CTC Live Fire Mod) provides Future Army System of Integrated Targets (FASIT) qualified live-fire capable targets which includes Stationary Armor Targets (SAT) with accompanying Battlefield Effects Simulators (BES), Stationary Infantry Targets (SIT), Human Urban Targets (HUT), Double-Arm SITs, Moving Infantry Targets (MIT), and non-FASIT qualified Aviation 3-D and Unattended Aerial Systems (UAS) targets. These provide a capability for</p>		-	-	2.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>the CTCs to support the transition from Mission Rehearsal Exercise/Situational Training Exercise (MRE/ST) rotations to Unified Land Operations (ULO) against a hybrid threat.</p> <p>FY 2021 Plans: RDTE of \$2.500 million provides for development of the new Battlefield Effects Devices. These devices will focus on enhancing and simulating a hostile tank's main gun fire signature from a target device, tracer round shootback signature, and small arms hostile fire via pyrotechnic solutions. The pyrotechnic battlefield effect device effort will provide for inexpensive and ruggedized systems that can be used to create a more realistic training environment for Soldiers to train with in a live fire environment. The pyrotechnic solutions will align with the defined OPTEMPO in the FASIT CPD.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: This is a new start in FY 2021.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Target Modernization program.</p> <p>Description: The Target Modernization program's primary innovation goals are the development of trackless moving target systems, advanced non-contact ballistic hit detection and recognition system, high fidelity dynamic infrared threat representations, advanced human type targets, non-pyrotechnic battlefield effects replication systems, and augmented reality on live fire ranges; all aimed at increasing training realism, enhancing Soldier resiliency, and lowering life cycle costs.</p> <p>FY 2020 Plans: RDTE of \$2.077 million provides for the incremental funding of the Non-Contact Hit Sensor (NCHS) research and development. FY2020 should see the development and field testing of the NCHS prototype system. Funding will also initiate the Phase III SBIR contract for the Dynamic Infrared Projection (DIRP) Systems. The DIRP system will provide for an inexpensive and ruggedized infrared projection system that can be utilized to create accurate real-time dynamic thermal representations on target silhouettes or other mediums based on training doctrine within the various live and virtual training applications to enhance realism and feedback for the trainee. The DIRP system technology would support the creation of a high fidelity, time and posture based, thermal replication system for live fire target systems. Current solutions are heating pads adhered to the target silhouette. The shapes are not accurate, get damaged with live fire engagements, and create thermal bleeding; the shapes are static with respect to time, and do not support changes in thermal intensity over time, movement or posture changes. The DIRP solution will remove the threat signature thermal generation from the line of fire (damage), and support the recognition of combat vehicles with high resolution imaging. The thermal images will support time or movement based increases in temperature, and enhanced thermal representation (muzzle flash, burning vehicle), resulting in enhanced training realism.</p> <p>FY 2021 Plans:</p>		1.657	1.988	3.788

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>RDTE of \$3.788 million provides for the incremental funding of the Non-Contact Hit Sensor (NCHS) research and development aimed at the completion and obtainment of TRL 7/8 for the advanced non-contact ballistic hit detection and recognition system, to include environmental verification and performance testing. Funding will also initiate the Phase III SBIR contract for the non-pyrotechnic battlefield effects replication technologies. The Non-pyrotechnic battle field effects effort will focus on hostile shot replication, machine gun fire replication, black smoke generation, and sound effects simulators via non-pyrotechnic solutions. The Non-pyrotechnic battle field effects effort will provide for an inexpensive and ruggedized system that can be utilized to create accurate training environment realism enhancement. Current pyrotechnic solutions require specialized training, handling, and procurement of effects, and can effect training throughput by requiring the ranges to shut down during reloading. The non-pryo solutions will align with the defined OPTEMPO in the FASIT CPD. Funding will also support the 14 year old TRACR software baseline from a CORBA based CTIA v3.x based solution to a fully realized Service orchestrated HTML5.0 based CTIA v4.x compliant solution to ensure supportability, cybersecurity protections, and viability for the next ten years.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Funding has increased from FY 2020 due to the additional requirement of the Phase III SBIR contract for the non-pyrotechnic battlefield effects replication technologies.</p>				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the Digital Range Training System (DRTS)</p> <p>Description: Conduct development of a government-owned Technical Data Package (TDP) for the DRTS program to enable competitive acquisitions for targets.</p> <p>FY 2020 Plans: RDTE of \$1.600 million begins investigating the cybersecurity aspects of utilizing an Army Data Center to centrally manage the DRTS software by examining current DoD policy, exploring commercial applications of cybersecurity, and developing the Risk Management Framework implementation plan. DRTS will also investigate the implementation approach for migrating software capabilities from each of the ranges into the cloud while still providing uninterrupted training capability locally on the range should the cloud linkage be interrupted. This will allow for prototyping the DRTS software utilizing a "local" cloud environment at the Fort Benning Digital Multipurpose Range Complex (DMPRC) as the initial step in the overall DRTS migration strategy. This includes an investigation of OT requirements to operate DRTS and other training systems software on a consolidated set of IT hardware.</p> <p>FY 2021 Plans: RDTE of \$1.500 million will continue the development of a government-owned and managed Technical Data Package (TDP) for the target lifter devices utilized on the DRTS and other home station ranges. The funding will be used to complete the design efforts, build prototype units, and perform the developmental testing to validate that the TDP works as required and can be used for the future production of the target lifters.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p>		-	1.511	1.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Estimated cost for development.				
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)</p> <p>Description: Conduct research into the development of an Army Data Center "cloud" migration strategy to assist in understanding the risks and technical challenges associated with taking software that is run at numerous (70+) IMTS standalone sites, connecting them to communications infrastructure, and managing the software and cybersecurity aspects through shared Information Technology (IT).</p> <p>FY 2020 Plans: RDTE of \$1.000 million will prototype the Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS) software utilizing a "local" cloud environment at the Fort Benning CACTF as the initial step in the overall IMTS migration strategy. This includes an investigation of OT requirements to operate IMTS and other training systems software on a consolidated set of IT hardware.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: FY 2020 is the last year of funding for this requirement.</p>		-	0.911	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for OPFOR Surrogate Wheeled Vehicles (OSWV)</p> <p>Description: EMD phase contract activities for the OSWV program.</p> <p>FY 2020 Plans: RDTE Funding will continue to assist in the first article of testing for tactical vehicles, tactical vehicle engineering design and visual modification. Funding will also allow for the modification and testing of technical vehicles.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: OSWV program RDTE initiatives will be complete in FY 2020; therefore, no RDTE funding is required in FY 2021.</p>		2.783	3.629	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for the OPFOR Integrated Air Defense System (IADS)</p> <p>Description: EMD phase contract activities for the IADS Program</p> <p>FY 2021 Plans: FY 2021 RDT&E funding for \$2.663 million is to integrate the Tactical Engagement Simulation System (TESS) hardware onto the CH-47 platform, and integrate the Aircraft Survivability Equipment (ASE) training simulation into the CH-47F operational flight</p>		8.275	-	2.663

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020		
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>program. Integration is followed by validation through analysis, demonstration, and testing in the CH-47F system integration laboratory, and ground and flight testing for airworthiness qualification conducted at Redstone Test Center.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: IADS had no RDTE funding in FY 2020. FY 2021 represents the actual cost of development.</p>				
<p>Title: Radar Signal Emulator Development for Integrated Air Defense Systems (IADS)</p> <p>Description: Radar Signal Emulator Development for Integrated Air Defense Systems (IADS)</p>		9.520	-	-
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for Basic Electronics Maintenance Trainer (BEMT)</p> <p>Description: BEMT provides the essential modernized electronic system maintenance training capability for the Army, Army National Guard, and the Army Reserve to achieve Military Occupational Specialty-Qualification (MOS-Q) for 40 MOS at 24 Active, National Guard, and Army Reserve camps, posts, and stations. BEMT will be modernizing the electronics maintenance training. BEMT provides training in basic electronics, while saving institutions significant administrative expenses over live training alternatives.</p> <p>FY 2020 Plans: Enhancement of the Learning Management System courseware and Army Enterprise server capability.</p> <p>FY 2021 Plans: Enhancement of the Learning Management System courseware. Developing solutions to improve Army Enterprise server capability.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase due to estimated cost for development.</p>		-	0.092	0.238
<p>Title: Engineering and Manufacturing Development (EMD) phase contract activity for OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) program</p> <p>Description: EMD phase contract activities for the OPFOR Attack Aircraft Shoot-back Capability (OA2SBC) program.</p> <p>FY 2021 Plans: FY 2021 Base RDTE dollars in the amount of \$.201 million will be used to develop weapon processor software, integrate with the training instrumentation systems at the Combat Training Centers (CTCs), then validate the solution through testing.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement:</p>		-	-	0.201

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
This is a new start in FY 2021.			
Title: Suicide Prevention Program Description: Suicide Prevention Program FY 2020 funding for Suicide Prevention is realigned to PE 0605013A project FL9.	2.174	-	-
Title: FY 2020 SBIR/STTR Transfer Description: Funding transferred in accordance with Title 15 USC ?638 FY 2020 Plans: Funding transferred in accordance with Title 15 USC ?638 FY 2020 to FY 2021 Increase/Decrease Statement: Funding transferred in accordance with Title 15 USC ?638	-	1.245	-
Accomplishments/Planned Programs Subtotals	42.604	27.501	28.036

	FY 2019	FY 2020
Congressional Add: Radio Frequency Emitters FY 2020 Plans: Radio Frequency Emitters	-	3.411
Congressional Adds Subtotals	-	3.411

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MA6600: <i>Combat Training Centers Support</i>	117.584	123.411	90.580	-	90.580	78.424	75.501	72.046	80.319	Continuing	Continuing
• NA0100: <i>Training Devices, Nonsystem</i>	217.597	215.453	161.814	-	161.814	172.346	188.148	189.306	201.457	Continuing	Continuing

Remarks

D. Acquisition Strategy
Competitive development efforts based on performance specifications.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>
<p>1. In FY 2019 - 2021, Combat Training Center Instrumentation Systems (CTC-IS) RDTE will be used to fund a Life Cycle Product-line Management (LCPM) contract structured as a 5 year Single Award Indefinite-Delivery/Indefinite-Quantity (IDIQ) for the implementation of a Hardware Product Line (HPL), the contractor was selected. The strategy is to establish a deliberate approach to Life Cycle Management (LCM) of Live Training Family of Systems, providing the framework for future Life Cycle Efforts for the Hardware Product Line Framework.</p> <p>2. In FY 2015, an Indefinite-Delivery/Indefinite-Quantity (IDIQ) contract with a 1-year base and 4 single-year option periods was awarded to General Dynamics Mission Systems - CTIA is executed under this contract. In FY 2020, a new competitive IDIQ contract with a 1-year base and 7 single-year option periods will be awarded - CTIA will be executed under this contract.</p> <p>3. In FY 2020, Target Modernization will award the first year of a projected three-year Phase III SBIR for the maturation and product development of the Non-Contact Hit Sensor. In FY 2021, it will initiate the award of a projected three-year the Phase III SBIR contract for the maturation and product development of the non-pyrotechnic battlefield effects replication technologies.</p> <p>4. The LVC-IA Enhanced Capability contract is the competitively awarded follow-on effort awarded in 3rd Quarter FY 2016. This contract has a two-year base and four single-year option periods to provide the additional capabilities for Versions 3, 4 and beyond. The contract was awarded to Cole Engineering and Science, Inc. (CESI) to provide for the development, fielding and training of each version capability for the designated Basis of Issue Plan (BOIP) sites and provide Post-Deployment Software Support (PDSS) for all currently fielded versions.</p> <p>5. In FY 2021, the Digital Range Training System (DRTS) will incrementally fund established efforts under the Life Cycle Product-line Management (LCPM) IDIQ contract which will be for the development of the target Technical Data Package (TDP).</p> <p>6. In FY 2021, the Combat Training Center Live Fire Modernization (CTC Live Fire Mod) will award a new, multi-year delivery order under the Life Cycle Product-line Management (LCPM) IDIQ contract.</p> <p>7. In FY 2017, OPFOR Integrated Air Defense System (IADS) awarded a new standalone contract with a base, plus 4 option year periods.</p> <p>8. In FY 2019, OPFOR Surrogate Wheeled Vehicles (OSWV) pursued an organic solution to develop, integrate and test Visual Modifications for Tactical and Technical Vehicles.</p> <p>9. In FY 2021, BEMT will exercise the second option year of Indefinite Delivery/Indefinite Quantity (IDIQ) contract which was awarded in May 2019.</p> <p>10. In FY 2021, Instrumentable-Multiple Integrated Laser Engagement System (I-MILES) will leverage the General Dynamics contract vehicle and competitive OTA approaches to address EUL / relevancy challenges as product lines reach those trigger points in their life cycle or changes to weapon system configurations drive those</p>		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

actions. This effort would enable a wide range of industry partners to integrate LTEC/LPAN into existing systems and execute SLEP/Tech Refresh activities as required until Live STE capabilities are introduced.

11. In FY 2021, Home Station Instrumentation Training System (HITS) will award a new delivery order on the General Dynamics contract.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev					Project (Number/Name) 241 / Nstd Combined Arms						
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OneTESS Program Management	Various	PEO STRI : Orlando, FL	8.046	-		-		-		-		-	0.000	8.046	8.046
OneTESS Program Management	Various	PEO STRI, : Orlando, FL	2.040	-		-		-		-		-	0.000	2.040	2.040
HITS Program Management	Various	PEO STRI : Orlando, FL	1.348	-		-		-		-		-	0.000	1.348	1.348
CTC-IS Program Management	Various	PEO STRI : Orlando, FL	9.018	-		-		-		-		-	0.000	9.018	9.018
MSTC Program Management	Various	PEO STRI : Orlando, FL	0.952	-		-		-		-		-	0.000	0.952	0.952
I-MILES Program Management	Various	PEO STRI : Orlando, FL	0.511	-		-		-		-		-	0.000	0.511	0.511
EST Program Management	Various	PEO STRI : Orlando, FL	0.214	-		-		-		-		-	0.000	0.214	0.214
LVC-IA Program Management	Various	PEO STRI : Orlando, FL	10.466	0.399	Nov 2018	0.178	Nov 2019	0.153	Nov 2020	-		0.153	Continuing	Continuing	Continuing
Target Modernization	Various	PEO STRI : Orlando, FL	0.614	-		-		-		-		-	0.000	0.614	0.614
ETC-IS Program Management	Various	PEO STRI : Orlando, FL	0.164	-		-		-		-		-	0.000	0.164	0.164
CTIA	Various	PEO STRI : ORLANDO, FL	0.876	-		-		-		-		-	0.000	0.876	0.876
Soldier Fitness Program	TBD	Mulitple : Various	2.100	-		-		-		-		-	0.000	2.100	2.100
Suicide Prevention	TBD	Multiple : Various	2.139	2.174	Jun 2019	-		-		-		-	0.000	4.313	4.313
SVT Program Management	Various	PEO STRI : Orlando, FL	0.049	-		-		-		-		-	0.000	0.049	0.049
OPFOR Integrated Air Defense System (IADS) Program Management	Various	PEO STRI : Orlando, FL	0.742	-		-		-		-		-	0.000	0.742	0.742
Congressional Add for Combined Arms Center	Various	PEO STRI : Huntsville, AL	0.177	-		-		-		-		-	0.000	0.177	0.177

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604715A / Non-System Training Devices - Eng Dev				241 / Nstd Combined Arms							
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Threat Integrated Air Defense System															
FY 2020 SBIR/STTR Transfer	TBD	Various : Various	-	-		1.245		-		-		-	0.000	1.245	-
Subtotal			39.456	2.573		1.423		0.153		-		0.153	Continuing	Continuing	N/A
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OneTESS	SS/CPFF	General Dynamics : Fairfax, VA	124.769	-		-		-		-		-	0.000	124.769	124.769
OneTESS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	10.430	-		-		-		-		-	0.000	10.430	10.430
CTIA	Option/IDIQ	General Dynamics Mission Systems : Orlando, FL	18.932	1.876	Jan 2019	-		-		-		-	0.000	20.808	20.808
CTIA	C/CPFF	TBD : Orlando, FL	-	-		2.454	Jan 2020	2.508	Jan 2021	-		2.508	Continuing	Continuing	Continuing
I-MILES	Option/IDIQ	General Dynamics Mission Systems : Orlando, FL	1.481	-		1.270	Oct 2019	2.802	Mar 2021	-		2.802	Continuing	Continuing	Continuing
I-MILES RELEVANCY	SS/IDIQ	Lockheed Martin : Orlando, FL	2.171	1.751	May 2019	1.215	May 2020	-		-		-	Continuing	Continuing	Continuing
CTC-IS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL	40.740	1.846	Mar 2019	2.519	Feb 2020	1.573	Mar 2021	-		1.573	Continuing	Continuing	Continuing
CTC-IS	C/IDIQ	GENERAL DYNAMICS ONE SOURCE : Orlando, FL	2.766	1.670	Aug 2019	1.604	Aug 2020	1.941	Aug 2021	-		1.941	Continuing	Continuing	Continuing
HITS	C/FFP	Riptide : Orlando, FL	1.379	-		-		-		-		-	0.000	1.379	1.379

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604715A / Non-System Training Devices - Eng Dev				241 / Nstd Combined Arms							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
HITS	C/IDIQ	General Dynamics Mission Systems : Orlando, FL 32826	4.009	-		2.427	Jul 2020	1.249	Jul 2021	-		1.249	Continuing	Continuing	Continuing
HITS	Option/IDIQ	General Dynamics Mission Systems (GDMS) : Orlando, FL 32826	2.429	0.725	Jan 2019	1.067	Jan 2020	0.630	Jan 2021	-		0.630	Continuing	Continuing	Continuing
MSTC Development	C/FP	Multiple : Various	5.128	-		0.609	Jul 2020	0.448	Jul 2021	-		0.448	Continuing	Continuing	Continuing
EST Development	C/FP	Cubic Simulation Systems, Inc. : Orlando, FL 32809-3813	1.528	-		-		-		-		-	0.000	1.528	1.528
EST	C/FP	Nova Technologies : Panama City, FL 32404-6747	0.609	-		-		-		-		-	0.000	0.609	0.609
EST Enhanced Capabilities	C/FFP	Meggitt Training Systems, Inc. : Suwanee, GA 30024-1247	2.075	-		-		-		-		-	0.000	2.075	2.075
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring	C/FFP	Dignitas Technologies : Orlando, FL 32817	0.776	-		-		-		-		-	0.000	0.776	0.776
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements	C/IDIQ	Nova Technologies : Panama City, FL 32404-6747	1.242	-		-		-		-		-	0.000	1.242	1.242
LVC-IA Development	C/CPFF	Cole Engineering Services, Inc : Orlando, FL	29.822	-		-		-		-		-	0.000	29.822	29.822
LVC-IA Enhanced Capability	C/CPFF	Cole Engineering Services, Inc (CESI) : Orlando, FL	5.706	-		-		-		-		-	0.000	5.706	5.706

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev				Project (Number/Name) 241 / Nstd Combined Arms							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
LVC-IA Enhanced Capability	Option/CPFF	Cole Engineering Services, Inc (CESI) : Orlando, FL	6.994	2.775	Dec 2018	3.542	Nov 2019	4.345	Nov 2020	-		4.345	Continuing	Continuing	Continuing
Combat Training Center Live Fire Modernization (CTC Live Fire Mod)	C/CPFF	General Dynamics One Source, LLC : Fairfax, VA	-	-		-		2.500	Feb 2021	-		2.500	Continuing	Continuing	Continuing
Target Modernization	C/IDIQ	Pratt and Miller Engineering : Orlando, FL	6.600	-		-		-		-		-	0.000	6.600	6.600
Target Modernization	Option/CPFF	Pratt and Miller Engineering (P&M) : Orlando, FL	4.206	0.508	Oct 2018	-		-		-		-	0.000	4.714	4.713
Target Modernization	C/CPFF	JRM Technologies : Orlando	-	1.149	Dec 2018	-		-		-		-	0.000	1.149	1.149
Target Modernization	SS/CPFF	SensorMetrix : San Diego, CA	-	-		2.003	Jan 2020	1.625	Jan 2021	-		1.625	Continuing	Continuing	Continuing
Target Modernization	SS/CPFF	Digital Solid State Propulsion, Inc. : Reno, NV	-	-		-		2.163	Feb 2021	-		2.163	Continuing	Continuing	Continuing
Congressional Add Center of Excellence for Military Operations in Urban Terrain and Cultural Trn	C/FP	Multiple : Various	2.996	-		-		-		-		-	0.000	2.996	2.996
ETC-IS	SS/CPFF	General Dynamics C4 Systems : Orlando, FL 32826	4.836	-		-		-		-		-	0.000	4.836	4.836
Digital Range Training System (DRTS)	C/CPFF	General Dynamics Mission Systems : Orlando, FL	1.539	-		1.527	Jan 2020	-		-		-	0.000	3.066	3.139
Digital Range Training System (DRTS)	Option/CPFF	General Dynamics One Source, LLC : Fairfax, VA	-	-		-		1.500	Jan 2021	-		1.500	Continuing	Continuing	Continuing
OPFOR Integrated Air Defense System (IADS)	MIPR	PEO IEWS, PM Aircraft Survivability	16.065	5.306	Feb 2019	-		-		-		-	0.000	21.371	21.371

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity 2040 / 5				R-1 Program Element (Number/Name) PE 0604715A / Non-System Training Devices - Eng Dev				Project (Number/Name) 241 / Nstd Combined Arms							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
		Equipment (ASE) : Huntsville, AL													
OPFOR Integrated Air Defense System (IADS)	MIPR	Target Systems Management Office, PEO STRI, PEO STRI : Huntsville, AL	0.915	-		-		-		-		-	0.000	0.915	0.915
Radar Signal Emulator Development for IADS	C/TBD	To Be Determined : Orlando, FL	-	9.520	Feb 2019	-		-		-		-	0.000	9.520	9.520
Soldier/Squad Virtual Trainer (S/SVT) Program	C/CR	OTA - CUBIC and MEGGITT : Orlando, FL	-	5.534	Mar 2019	-		-		-		-	0.000	5.534	5.534
OPFOR Surrogate Wheeled Vehicles (OSWV)	IA	Tank Automotive Research Development and Engineering Center : Warren, MI	-	2.783	Mar 2019	3.644	Mar 2020	-		-		-	0.000	6.427	6.501
Basic Electronics Maintenance Trainer (BEMT)	SS/FFP	Nida Corp : Melbourne, FL	-	-		0.108	Jan 2020	0.238	Nov 2020	-		0.238	Continuing	Continuing	Continuing
Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)	C/CPFF	General Dynamcis Mission Systems : Orlando, FL	-	-		0.927	Jan 2020	-		-		-	0.000	0.927	1.000
Congressional Add for Combined Arms Center Threat Integrated Air Defense System	C/CPFF	Scientific Research Corporation : Huntsville, AL	9.823	-		-		-		-		-	0.000	9.823	9.823
OPFOR Attack Aircraft Shoot-back Capability	C/TBD	TBS : Orlando, FL	-	-		-		0.201	Mar 2021	-		0.201	0.000	0.201	0.201
Congressional Add for Radio Frequency Emitters	C/TBD	ACC, Orlando : Orlando, Florida	-	-		3.427	Mar 2020	-		-		-	0.000	3.427	3.500
Subtotal			309.966	35.443		28.343		23.723		-		23.723	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Army												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
2040 / 5				PE 0604715A / Non-System Training Devices - Eng Dev				241 / Nstd Combined Arms							
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OneTESS	Various	Various : Orlando, FL	6.596	-		-		-		-		-	0.000	6.596	6.596
OneTESS	Various	Various : Various	0.262	-		-		-		-		-	0.000	0.262	0.262
CTIA	Various	Various : Various	12.844	-		-		-		-		-	0.000	12.844	12.844
Target Modernization	Various	Various : Various	0.192	-		-		-		-		-	0.000	0.192	0.192
Subtotal			19.894	-		-		-		-		-	0.000	19.894	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
OneTESS Development & Test	Various	Multiple : Orlando, FL	4.162	-		-		-		-		-	0.000	4.162	4.162
OneTESS Test Support	Various	Multiple : Orlando, FL	1.280	-		-		-		-		-	0.000	1.280	1.280
HITS	Various	Various : Orlando, FL	0.740	-		-		-		-		-	0.000	0.740	0.740
LVC-IA Test Support	Various	Multiple : Orlando, FL	9.614	1.619	Dec 2018	1.146	Nov 2019	1.497	Nov 2020	-		1.497	Continuing	Continuing	Continuing
IEDES	Various	Multiple : Orlando, FL	0.519	-		-		-		-		-	0.000	0.519	0.519
OPFOR Integrated Air Defense System (IADS)	SS/CPFF	Inter-Coastal Electronics, Inc. : Mesa, AZ	3.151	2.969	Aug 2019	-		2.663	Mar 2021	-		2.663	Continuing	Continuing	Continuing
Subtotal			19.466	4.588		1.146		4.160		-		4.160	Continuing	Continuing	N/A
Project Cost Totals			388.782	42.604		30.912		28.036		-		28.036	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CTIA Development and Architectural Evolution	[Redacted]																											
CTC IS Development	[Redacted]																											
I-MILES Development	[Redacted]																											
I-MILES RELEVANCY	[Redacted]																											
HITS Development	[Redacted]																											
MSTC Trainer Developments	[Redacted]																											
LVC-IA - Version 4 (Development, Integration, Demonstration and	[Redacted]																											
LVC-IA - Concurrency with Mission Command Systems	[Redacted]																											
Combat Training Center Live Fire Modernization (CTC Live Fire Mod)	[Redacted]																											
Target Modernization Development	[Redacted]																											
S/SVT - Development	[Redacted]																											
Digital Range Training System (DRTS)	[Redacted]																											
OPFOR Integrated Air Defense System (IADS)	[Redacted]																											

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>	

Event Name	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
OPFOR Surrogate Wheeled Vehicles (OSWV)																												
BEMT Army Enterprise Network Server Development																												
Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)																												
OPFOR Attack Aircraft Shoot-back Capability (OA2SBC)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
OneTESS Development	1	2013	4	2014
CTIA Development and Architectural Evolution	1	2012	4	2025
CTC IS Development	1	2010	4	2025
I-MILES Development	2	2017	4	2021
I-MILES RELEVANCY	2	2018	4	2025
HITS Development	3	2012	4	2025
MSTC MT-C2 Development	2	2016	3	2018
MSTC Trainer Developments	2	2017	4	2025
EST Enhanced Capabilities Adaptive Marksmanship and Intelligent Tutoring	3	2015	2	2016
EST Enhanced Capabilities	3	2016	2	2018
CFFT Enhanced Joint Fires Observer (JFO) Training and Certification Requirements	2	2017	3	2018
LVC-IA - Version 1	1	2010	4	2012
LVC-IA - Version 2 (Development, Integration, Demonstration and Testing)	1	2014	3	2016
LVC-IA - Version 3 (Development, Integration, Demonstration and Testing)	4	2016	3	2018
LVC-IA - Version 4 (Development, Integration, Demonstration and Testing)	4	2018	4	2021
LVC-IA - Concurrency with Mission Command Systems	1	2022	4	2032
Combat Training Center Live Fire Modernization (CTC Live Fire Mod)	2	2021	2	2023
Target Modernization Development	1	2016	4	2025
CSF2	1	2015	4	2016
S/SVT - Development	3	2019	3	2020
Digital Range Training System (DRTS)	2	2018	4	2023
OPFOR Integrated Air Defense System (IADS)	4	2017	4	2022

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0604715A / <i>Non-System Training Devices - Eng Dev</i>	Project (Number/Name) 241 / <i>Nstd Combined Arms</i>

Events	Start		End	
	Quarter	Year	Quarter	Year
OPFOR Surrogate Wheeled Vehicles (OSWV)	2	2019	4	2021
BEMT Army Enterprise Network Server Development	1	2020	1	2024
Integrated Military Operations in Urban Terrain (MOUT) Training System (IMTS)	2	2020	4	2021
OPFOR Attack Aircraft Shoot-back Capability (OA2SBC)	2	2021	2	2022