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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Army	Date: May 2017
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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>							
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
Total Program Element	-	18.705	25.596	29.820	-	29.820	35.321	62.062	61.666	62.631	-	-
312: <i>Army/Joint Experimentation</i>	-	0.486	0.325	7.099	-	7.099	7.902	8.214	8.216	8.324	-	-
317: <i>Current Force Capability Gaps</i>	-	16.581	23.779	20.898	-	20.898	25.577	51.983	51.550	52.524	-	-
33B: <i>Soldier-Centered Analyses For Future Force</i>	-	1.638	1.492	1.823	-	1.823	1.842	1.865	1.900	1.783	-	-

A. Mission Description and Budget Item Justification

The Army Concepts Experimentation Program Element (PE) supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability requirements and solution across Doctrine, Organization, Training, Materiel, Leadership and Education, personnel, and Facilities (DOTMLPF) domains in order to learn and mitigate risk for current and future forces. Experiments and projects inform the Army future concepts and assess high-risk conceptual assumptions in order to focus required capabilities and represent the user's requirements in the future Army. Army experiments use the combined resources of Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinements, and assessment of future force concepts - to inform capability developments and validate concepts for current and future force. Simulated Experiments (SIMEX) will integrate and assess Army Concepts, Force Designs phases, with Army level issues across the breadth of a campaign that highlights validation and integration of Force 2025 outcomes.

Enables TRADOC Capability Development and Integration Directorates (CDID)/TRADOC Capability Managers (TCM) Joint Capabilities Integration and Development System (JCIDS) development to support Program Executive Offices (PEOs) and Program Managers (PMs) for acquisition milestone decisions. The Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) organizational community of PEOs/PMs supplemented manpower shortfalls to TRADOC for many years. This was necessary to ensure work affecting their materiel development programs, specifically the mandated JCIDS process necessary for Milestone acquisition Army Requirements Oversight Council/Joint Requirements Oversight Council (AROC/JROC) decisions, was executed in a timely manner. Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all DOTMLPF consideration for warfighting functional areas. Provides for TRADOC to serve as the lead for Accelerated Capability Development (ACD) to address current critical operational needs enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Early Synthetic Prototyping enables wargaming, experimentation capability that engages soldiers across the Army through early-fidelity game environments to gain their insights and recommendations in the development of future doctrine, organization, and materiel solutions. Enables TRADOC to serve as the central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments and integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. Provides Army Warfighter Assessments (AWA), which will allow TRADOC to physically integrate, assess and evaluate the network, capability sets and other adaptive capabilities to accelerate the systems acquisition process of providing DOTMLPF recommendations to the Army. Provides support to the Army Warfighting Challenges (AWFC) that are used by the Army to frame learning and collaboration.

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Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>
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The Soldier-Centered Analysis For Future Force will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. Design analyses, constructive simulations and Soldier-in-the loop assessments will ensure that manpower requirements and workload and skill demands are considered to avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force.

B. Program Change Summary (\$ in Millions)	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>
Previous President's Budget	19.430	25.596	29.339	-	29.339
Current President's Budget	18.705	25.596	29.820	-	29.820
Total Adjustments	-0.725	0.000	0.481	-	0.481
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.725	-			
• Adjustments to Budget Years	0.000	0.000	0.474	-	0.474
• CivPay Adjustments	0.000	0.000	0.007	-	0.007

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Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 312 / <i>Army/Joint Experimentation</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
312: <i>Army/Joint Experimentation</i>	-	0.486	0.325	7.099	-	7.099	7.902	8.214	8.216	8.324	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Army / Joint Experimentation supports current and future concepts and capabilities involving Soldiers and Leaders within live, virtual, and constructive environments by exploring concepts, capability requirements and solutions across Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities (DOTMLPF) domains in order to learn and mitigate risk for current and future forces. Experiments inform Army future concepts and assess high-risk conceptual assumptions in order to focus required capabilities and represent the user's requirements in the future Army. Army experiments use the combined resources of Army battle laboratories, operational units, research labs, materiel developers, industry and academia to collaborate in the development, refinements, and assessment of future force concepts - to inform capability developments and validate concepts for current and future force. Beginning in FY 2015, this Project supports the Army's Simulated Experiments to integrate and assess Army Force 2025 and Beyond (F2025B) Concepts, Capabilities, Force Designs, Operational and Organizational Plans in the near (2014-2020), mid (2020-2030) and far (2030-2040) term.

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

	FY 2016	FY 2017	FY 2018
Title: Experimentation - High-Fidelity Live-Virtual-Constructive Experiments	0.486	0.325	7.099
Description: Experiments address concept and capability developments including integration of capabilities for all Brigade Combat Team (BCT) types; development of future DOTMLPF requirements and solutions; and acceleration and integration of capabilities for current force BCTs and above brigade.			
FY 2016 Accomplishments: Simulated Experiments (SIMEX) became the focus to integrate and assess Army Concepts, Force Designs, and Capabilities.			
FY 2017 Plans: Simulated Experiments (SIMEX) will become the focus to integrate and assess Army Concepts, Force Designs, and Capabilities to support Force 2025B Maneuvers to develop, refine, and validate rerequisite Force 2025 and Beyond Concepts, Operational and Organizational Plans, and DOTMLPF solutions to achieve the vision of the Army's Force in the near (2014-2020), mid (2020-2030), and far (2030-2040) terms.			
FY 2018 Plans: Enables the Army to conduct early fidelity exploration of Doctrine, Organization and Materiel solution through exposure of Soldiers to new innovative ideas and material. Establishes a continuing collaboration, feedback, and electronic analytical collection capability which captures, through simulated application of future force prototype concepts, explicit qualitative feedback of Soldiers experience gathered from simulated environments intertwined with surveys, polls, and discussion boards. Directed SIMEX leverage unique support analytics which capture Soldier and Team interaction during virtual small unit, first-person operating			

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<p>environment events from shooter engagements to high tempo teaming events which will become the focus to integrate and assess Army Concepts, Force Designs, and Capabilities to support Force 2025B Maneuvers to develop, refine, and validate prerequisite Force 2025 and Beyond Concepts, Operational and Organization Plans, and DOTMLPF solutions to achieve the vision of the Army's Force in the near (2014-2020), mid (2020-2030)((and far (2030-2040) terms. Empowers participants to explore innovative techniques and participate in equipment and material design options which enables the Maneuver Battle Lab to be innovative in partnering with Department of Defense (DoD) Research and Development organizations in the development of solutions to Army Warfighting Challenges that would be assessed through Army Experimentation assessments. Leverages design of a high echelon, strategy environment which examines how units organize and employ future capabilities on the battlefield. The Army Capabilities Integration Center (ARCIC) continues, through a distributive network capability to support the Army Level Acquisition Design and merge with the Experimentation Mission while leveraging and sharing the expense of the Battle Labs to interject a new dynamic interactive process into proponent mission to engage Soldiers to select academia and industry solutions into a research opportunity through virtual exploration of the introduced concepts and equipment throughout a simulated operational environment selected from any location in the world. As Soldiers explore new ideas, concepts, material, and doctrine, they employ new techniques in coordination with the development of requirements documents provide improved insight to environment solutions to techniques and material during the conceptual development stage rather than post construction.</p>			
Accomplishments/Planned Programs Subtotals		0.486	0.325
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Army										Date: May 2017		
Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605326A / <i>Concepts Experimentation Program</i>				Project (Number/Name) 317 / <i>Current Force Capability Gaps</i>			
COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
317: <i>Current Force Capability Gaps</i>	-	16.581	23.779	20.898	-	20.898	25.577	51.983	51.550	52.524	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Enables Army Capability Development and Integration Programs through TRADOC/Army Capabilities Integration Center (ARCIC) Capability Managers (TCM) to implement the Joint Capabilities Integration and Development System (JCIDS) in support of Program Executive Offices (PEOs) and Program Managers (PMs) for acquisition milestone decisions. The Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT) requires mandated work enabling their materiel development programs, specifically the mandated JCIDS process necessary for Milestone acquisition AROC/JROC decisions, executed in a timely manner. Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) consideration for warfighting functional areas. Provides for TRADOC to execute its assigned responsibilities as the lead for Accelerated Capability Development (ACD) to address current critical operational needs enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Supports critical research, development, test, and evaluation for Early Synthetic Prototyping enables wargaming, experimentation capability that engages soldiers across the Army through early-fidelity game environments to gain their insights and recommendations in the development of future doctrine, organization, and materiel solutions. Enables TRADOC execution of its responsibilities as central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination. Provides Army Warfighter Assessments (AWA), which will allow TRADOC to physically integrate, assess and evaluate the network, capability sets and other adaptive capabilities to accelerate the systems acquisition process of providing DOTMLPF recommendations to the Army. Provides support to the Army Warfighting Challenges (AWFC) that are used by the Army to frame learning and collaboration.

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

	FY 2016	FY 2017	FY 2018
Title: Army Expeditionary Warrior Experiment (AEWE) (formerly Prototype Solution Demonstrations)	0.153	-	-
Description: AEWE addresses live, prototype experimentation requirements.			
FY 2016 Accomplishments: This series of experiments was critical to promote research, development, and experimentation associated with Force 2025 and Beyond (F2025B) efforts. AEWE provides a live prototype experimentation venue to address current operational needs and F2025B requirements. FY16 campaign of experiments, Spiral K, is focused on technologies to support five primary study areas: Cellular Communications, Robics, Solider Load and Protection, Power Solutions, and Resupply.			
Title: Maneuver Fires Center Integration Exercise (MFX)	0.200	-	-

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Appropriation/Budget Activity 2040 / 6	R-1 Program Element (Number/Name) PE 0605326A / Concepts Experimentation Program	Project (Number/Name) 317 / Current Force Capability Gaps		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
Description: MFIX will conduct DOTMLPF assessments.				
FY 2016 Accomplishments: MFIX to conduct DOTMLPF assessments; test and certification training in support of small units across 5 domains (lethality, mission command, training and leader development, mobility and force protection). MFIX to integrate efforts to allow small units to operate in complex and uncertain environments, see and fight across a wide area, make contact with the enemy under favorable conditions, overmatch the enemy in encounter actions, maneuver rapidly to seize and retain the initiative, identify and act on opportunities, adapt rapidly to changing battle conditions, and operate as part of a combined arms, air-ground and Joint Team.				
Title: Net Zero Expeditionary Base Camp (NET 0) (Formerly Operational Energy) Description: Continue acceleration of Operational Energy initiative for remote Combat Outposts and Soldier Power initiatives.		0.275	-	-
FY 2016 Accomplishments: Continued acceleration of Operational Energy initiative for remote Combat Outposts and Soldier Power initiatives. Operational Energy provides the Warfighter with increased levels of agility, flexibility, and interoperability when operating in the expeditionary environment. Operational energy solutions will extend combat and tactical system's mission endurance and resilience, ensure uninterrupted and optimal energy to systems within the mission command network, and mitigate force risk by reducing energy demand. Phase two of multi-phased approached will support development of integrated operational energy solutions requiring a system-of-systems engineering approach. This approach will ensure that capability impacts are identified and addressed prior to delivering solutions, and that necessary employment guidance is provided and operational impacts are assessed.				
Title: Manned Unmanned Teaming Ground (MUM-T(G)) Description: Follow-on focused assessment to test interoperability, assess integration with manned systems, and evaluate advanced technologies.		0.203	-	-
FY 2016 Accomplishments: Follow-on focused assessment to test interoperability, assess integration with manned systems, and evaluate advanced technologies. MUM-T (G) capabilities will provide greater automation, improved performance, flexible use profiles, and greater survivability in contested environments. In addition, system will demonstrate improved communications, security from tampering, and streamlined system design. Capabilities must also demonstrate a reduction in manpower requirements to operate and support unmanned systems.				
Title: CDID/TCM Joint Capabilities Integration and Development System (JCIDS) Development in support of PEOs and PMs for acquisition milestone decisions.		15.750	21.779	-

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017	FY 2018
<p>Description: Funding ensures TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) considerations for warfighting functional areas.</p> <p>FY 2016 Accomplishments: Provides approximately 87 CMEs to CDIDs across TRADOC to develop and integrate the capabilities for which the ASA(ALT) community is developing and fielding materiel solution. FY 2014 would have been the first year of incremental funding until 100% of the requirement is funded in FY 2017 and beyond.</p> <p>FY 2017 Plans: blank</p>				
<p>Title: Accelerated Capabilities Initiatives in support of Force 2025 and Beyond</p> <p>FY 2017 Plans: Will provide for TRADOC to serve as the lead Accelerated Capability Developments (ACD) to address current critical operational needs in enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as TRADOC central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments. Integrate ACD activities to ensure unity and priority of effort and synchronization and optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination.</p>		-	2.000	-
<p>Title: Army Warfighting Assessments (Executed as part of NIE '.1' Events)</p> <p>FY 2018 Plans: Support Joint Expeditionary Manuever and Entry Operations, Set the Theater, Special Operations Forces/Coalition Forces Interoperability, Air-Ground Reconnaissance and Security, Joint/Multinational Operations, Sea Basing/Joint Logistics Over the Shore (JLOTS), Mobile Command Posts (Expeditionary), Man Unmanned Teaming, (Ground/Air) (MUM-T), Accelerated Capabilities Developments, Early Synthetic Prototyping and Architecture Army Warfighting Assessments (AWA).</p>		-	-	2.085
<p>Title: Accelerated Capabilites Development</p> <p>FY 2018 Plans: Provide for TRADOC to serve as the lead Accelerated Capability Development (ACD) to address current critical operational needs in enabling development and deployment/employment of accelerated capabilities (both materiel and non-materiel) to the current force. Serve as TRADOC central coordinating organization for Headquarters Department of the Army (HQDA) staff support requirements related to accelerated capabilities developments. Integrate ACD activities to ensure unity and priority of effort and</p>		-	-	1.520

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
synchronization and optimization of resources. Integrate accelerated capabilities development activities between proponent force modernization domains to include Joint/Service coordination.			
Title: CDID/TCM JCIDS Requirements Documentation FY 2018 Plans: Provide complete support necessary to finalize the transfer of Mission from the Assistant Secretary of the Army for Acquisition, Logistics, and Technology ASA(ALT) organizational community of PEOs/PMs to TRADOC underway since FY14. Ensure TRADOC acts independently as the voice of the warfighter, the user, in complement with the materiel developer in providing total capability management including integration of all doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) consideration for warfighting functional areas.		-	15.281
Title: ArCADIE New Requirements Description: ArCADIE is the Army authoritative source for architecture data and supports the community of practice requirement. FY 2018 Plans: Enable ARCIC to maintain ArCADIE and develop, verify, and validate operational architecture for 8 major BCT formations. Provide storage, accessibility, production, and certification of authoritative architecture data and supporting systems IAW DoD and DA information Assurance and management standards.		-	2.012
Accomplishments/Planned Programs Subtotals		16.581	20.898
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			

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COST (\$ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
33B: <i>Soldier-Centered Analyses For Future Force</i>	-	1.638	1.492	1.823	-	1.823	1.842	1.865	1.900	1.783	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This Project will provide early application of human performance and human figure modeling tools in the development of Soldier-focused requirements to shape technology for Future Force development. Design analyses, constructive simulations and Soldier-in-the-loop assessments will ensure that manpower requirements and workload and skill demands are considered to avoid information and physical task overloads, and take optimum advantage of aptitudes, individual and collective training, and numbers of Soldiers for an affordable Future Force. The cited work is consistent with the Strategic Planning Guidance, the Army Science and Technology Master Plan (ASTMP), the Army Modernization Plan, and the Defense Technology Area Plan (DTAP). Work in this Project is performed by the Army Research Laboratory (ARL).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2016	FY 2017	FY 2018	
Title: Manpower and Personnel Integration (MANPRINT)									1.638	1.492	1.823	
Description: Provide dedicated modeling and analysis cell for early and accurate MANPRINT estimates to Army Materiel Command (AMC), Research, Development, and Engineering Command (RDECOM) and its Research, Development, and Engineering Centers (RDECs), Training and Doctrine Command (TRADOC) Centers, Schools and Centers of Excellence (CoEs), Army Test and Evaluation Command (ATEC) and other service laboratories.												
FY 2016 Accomplishments: Developed model-based predictive analyses of Dismounted Infantry (DI) missions that provided Department of Defense (DOD) leadership with analytic data to inform requirements development and trade-off decisions as early as Milestone A. This analyses integrated Human Systems Integration (HSI) and Systems Engineering (SE) inputs to generate critical tasks combinations that provided the necessary analytical data to support cognitive workload measurement, Measures of Effectiveness and Measures of Performance for DI. Expanded digital library by developing three dimensional (3D) models of Air Soldier Clothing and equipment items to perform early human figure modeling assessments of future aviation platform designs. Developed 3D models of mounted and dismounted Soldier clothing and equipment items that are sized and fitted to ANTHRO II based human figure model sets for early assessments of future ground vehicle platform designs.												
FY 2017 Plans: Conducting analysis to determine appropriate parameters to capture Soldier information for system engineering that will improve system design and analysis progresses; expand scenario development and model based decision analysis framework to support Soldier system engineering methodology; develop and expand human performance apps for HSI data collection and analysis;												

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2016	FY 2017
<p>expand the digital library by developing 3D models of vehicle Soldier clothing and equipment items to perform early human figure modeling assessments of future vehicle platform designs and enhancements; and demonstrate a virtual physical accommodation analysis concept by integrating a virtual human figure embedded in a space with a CAD representation.</p> <p><i>FY 2018 Plans:</i> Will perform verification and validation of fixed-heel point accommodation model that will enable early assessment of driver's crew station designs for future combat vehicles; develop human figure modeling methodology for determining seat placement of encumbered manikin sets for improved assessment of future aviation and ground platforms; develop rapid modeling technique incorporating portable handheld laser scanning technology and point cloud reduction software to construct vehicle models compatible with human figure modeling analysis to support the Route Clearance Interrogation System (RCIS) program; conduct an analysis into the Army's Preventative Maintenance Checks and Services (PMCS) process to identify Human System Integration issues; develop algorithms to automate the PMCS level ten process, conduct experiments to demonstrate that the PMCS process can be automated resulting in a reduction of training requirements, entry errors to Global Combat Support System (GCSS)-Army, incorrect maintenance work orders, incorrect parts order, and significant reduction in maintenance man hours to perform the PMCS mission; and improve the accuracy of threat prediction algorithm to support command mission planning and course of action analyses. Develop Apps to support anthropometric data collection and analysis.</p>			
Accomplishments/Planned Programs Subtotals		1.638	1.492
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
N/A			