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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Army										Date: March 2019		
Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0605604A I Survivability/Lethality Analysis							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	41.296	40.480	35.075	-	35.075	35.881	36.719	35.600	36.174	0.000	261.225
675: Army Survivability Analysis & Evaluation Supp	-	41.296	40.480	35.075	-	35.075	35.881	36.719	35.600	36.174	0.000	261.225

A. Mission Description and Budget Item Justification

This Program Element (PE) funds objective vulnerability assessment products necessary for the inherently-governmental Army Test & Evaluation Command/Army Evaluation Center (ATEC/ AEC) mission, for the Research and Development communities as well as the Analytical communities. Products result from investigating, analyzing, assessing, experimenting and reporting on the survivability of Soldiers, and on the survivability, lethality and vulnerability (SLV) of the highest-priority Army and threat systems. Products are leveraged within the Army Futures Command and the Program Manager / Program Executive Office (PM/PEO) community to exercise constructive design influence over materiel development and to provide credible engineering-level underpinning and input to the Army Analytical Community. While the Army is at war, analytical results funded by this PE are also directly leveraged for urgent materiel releases and support to current operations.

This PE provides quantitative lethality and survivability analyses and data for fielded and developmental systems as the Army pursues its modernization priorities and ensures readiness through the fielding of lethal and survivable systems for multi-domain operations. PE funds engineering level SLV analysis in the areas of Long Range Precision Fires systems, Next Generation Combat Vehicles, Future Vertical Lift, Network/C3I, Air & Missile Defense, Soldier Lethality, and other highest Army priority efforts in the threat competencies of ballistics, electronic warfare, and cyber.

Vulnerability assessments funded by this PE are conducted across the spectrum of multi-domain battlefield threats to include: guns, missiles, mines and other methods of inflicting physical damage; jammers, countermeasures, and other electronic warfare techniques; cyber threats from insiders to external nation states; and directed energy weapons. Many different kinds of technical capabilities are used to generate these analyses, including specialized equipment, modeling & simulation, and experimental facilities. This PE ensures these capabilities can represent a credible live, virtual, or constructive hostile environment required for vulnerability assessment, thus enabling evaluators, developers, users, and decision makers to make informed SLV judgments for both Soldiers and materiel. These technical survivability and lethality details: enable properly informed decisions concerning acquisition and production; maximize Army overmatch in systems and tactics; inform investment priorities; and mitigate system weaknesses prior to actual combat.

Technical data and analysis results funded by this PE are efficiently leveraged for many different Army uses, reducing total cost to the Army by eliminating the need for duplicative capabilities funded by individual system developers. Central funding of this mission assures accurate and consistent treatment of survivability and lethality across all classes of systems, across all formal system Evaluations, and across the Army's analytical community as it conducts analyses of alternatives and other studies. Army Research, Development, and Engineering Command (RDECOM) and ATEC/AEC integrate the SLV work program into Army's formal Evaluation process to ensure ATEC can comply with its legally-mandated responsibility to assess system survivability along with effectiveness and suitability.

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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
2040: Research, Development, Test & Evaluation, Army / BA 6: RDT&E Management Support		PE 0605604A / Survivability/Lethality Analysis			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	41.843	40.496	41.075	-	41.075
Current President's Budget	41.296	40.480	35.075	-	35.075
Total Adjustments	-0.547	-0.016	-6.000	-	-6.000
• Congressional General Reductions	-0.011	-0.016			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.536	-			
• Adjustments to Budget Years	-	-	-6.000	-	-6.000
Change Summary Explanation					
FY 2020 decrease of \$6.000 Million aligns program requirements with Army modernization priorities in support of the National Defense Strategy.					

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Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605604A / Survivability/Lethality Analysis				Project (Number/Name) 675 / Army Survivability Analysis & Evaluation Supp			
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
675: Army Survivability Analysis & Evaluation Supp	-	41.296	40.480	35.075	-	35.075	35.881	36.719	35.600	36.174	0.000	261.225
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>	FY 2018	FY 2019	FY 2020
<i>Title:</i> Survivability, Lethality, Vulnerability Analyses (SLVA) for Ground, Aviation, Munitions, and Soldier Systems	19.216	18.621	16.135

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B. Accomplishments/Planned Programs (\$ in Millions)			FY 2018	FY 2019	FY 2020
Description: This activity provides integrated multi-domain SLV for CSA and other highest priority Ground, Aviation, Munitions, and Soldier Systems.					
FY 2019 Plans: Conduct ballistic and other needed SLVA on AEC's highest priority platform and weapon systems, supporting LFT&E pre-shot predictions, damage assessments, post-shot analysis, and crew survivability analysis and provide technical data for system evaluation reports. Provide vulnerability reduction recommendations to PMs for those systems supported. For systems analyzed, provide data to AMSAA for support of Army Analyses of Alternatives and other Army studies; incorporate collected data into the DOT&E live-fire report to Congress as well as the System Evaluation Reports prepared by ATEC.					
FY 2020 Plans: Will conduct SLVA on Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, and Soldier lethality systems, and on AEC and RDECOM's highest priority platform and weapon systems. For systems supported will work with materiel developers to constructively influence system design and will provide relevant data to Army analytical community to for supporting Analyses of Alternatives and other Army studies.					
FY 2019 to FY 2020 Increase/Decrease Statement: FY20 decrease aligns program requirements with Army modernization priorities.					
Title: Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) System Survivability Assessments			20.488	19.664	17.537
Description: This effort produces assessments of the survivability of C4ISR systems in EW and cyber threat environments and conducts Electronic Attack (EA) and cyber analyses that reveal critical vulnerabilities in C4ISR systems. It also defines, demonstrates, and recommends mitigation options to proponents and evaluators of C4ISR. A cyber vulnerability database is maintained for the benefit of the community.					
FY 2019 Plans: Analyze EP and cybersecurity for systems under test and systems under investigation in future NIEs and other high priority tests and for additional highest priority technologies and developmental systems as specified by ATEC so as to reduce costs of downstream development by identifying and fixing vulnerabilities earlier and to assure that formal Army evaluations at Milestone decision points are fully informed on EP and cyber issues. Mature and update cyber-attack M&S tools so as to more accurately assess the operational impact of such attacks on small unit mission accomplishment.					
FY 2020 Plans:					

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
Will conduct cyber and EW SLVA on network components as specified by the Network C3I CFT and AEC and on RDECOM? s highest priority Network/C3 and other systems. For systems supported will work with materiel developers to constructively influence system design and will provide relevant data to Army analytical community to support Analyses of Alternatives and other Army studies. Cyber support includes resiliency assessments of systems and Soldiers together and verification of fixes to identified vulnerabilities.				
FY 2019 to FY 2020 Increase/Decrease Statement: FY20 decrease aligns program requirements with Army modernization priorities.				
Title: Survivability, Lethality, Vulnerability (SLV) Analyses for Developmental Air and Missile Defense Systems		1.592	1.601	1.403
Description: Conduct integrated SLV analyses for developmental air and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems.				
FY 2019 Plans: Design, develop, and employ advanced electronic attack countermeasures to assess priority AMD systems and system of systems. Develop and provide advanced EA and cybersecurity test support for highest priority operational and developmental test events. Provide additional EA/EP and cyber analysis for other AMD systems as prioritized by ATEC.				
FY 2020 Plans: Will conduct high-priority SLVA on AMD systems and components as specified by AEC and RDECOM. For systems supported will work with materiel developers to constructively influence system design and will provide relevant data to Army analytical community to support Analyses of Alternatives and other Army studies.				
FY 2019 to FY 2020 Increase/Decrease Statement: FY20 decrease aligns program requirements with Army modernization priorities.				
Title: FY2019 SBIR/STTR Transfer		-	0.594	-
Description: FY2019 SBIR/STTR				
FY 2019 Plans: FY2019 SBIR/STTR				
FY 2019 to FY 2020 Increase/Decrease Statement: Adjusted to reflect FY2019 SBIR/STTR Transfer				
Accomplishments/Planned Programs Subtotals		41.296	40.480	35.075

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C. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		