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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 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605604A / <i>Survivability/Lethality Analysis</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	-	39.886	35.075	36.001	-	36.001	36.839	35.670	36.365	36.369	0.000	256.205
675: <i>Army Survivability Analysis & Evaluation Supp</i>	-	39.886	35.075	36.001	-	36.001	36.839	35.670	36.365	36.369	0.000	256.205

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. The U.S Army Combat Capabilities Development Command (CCDC) 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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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	40.480	35.075	35.881	-	35.881
Current President's Budget	39.886	35.075	36.001	-	36.001
Total Adjustments	-0.594	0.000	0.120	-	0.120
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.594	-			
• Adjustments to Budget Years	-	-	0.120	-	0.120

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Appropriation/Budget Activity 2040 / 6					R-1 Program Element (Number/Name) PE 0605604A / <i>Survivability/Lethality Analysis</i>				Project (Number/Name) 675 / <i>Army Survivability Analysis & Evaluation Supp</i>			
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675: <i>Army Survivability Analysis & Evaluation Supp</i>	-	39.886	35.075	36.001	-	36.001	36.839	35.670	36.365	36.369	0.000	256.205
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Title: Survivability, Lethality, Vulnerability Analyses (SLVA) for Ground, Aviation, Munitions, and Soldier Systems	18.621	15.604	16.370

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>Description: This activity provides integrated multi-domain SLV for CSA and other highest priority Ground, Aviation, Munitions, and Soldier Systems.</p> <p>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.</p> <p>FY 2021 Plans: Will conduct SLVA on Long Range Precision Fires, Next Generation Combat Vehicle, Future Vertical Lift, and Soldier lethality systems, and on AEC and CCDC's highest priority platform and weapon systems. For systems supported, working with materiel developers to constructively influence system design and providing relevant data to Army analytical community for supporting Analyses of Alternatives and other Army studies.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: FY 2021 increase supports anticipated mission requirements.</p>				
<p>Title: Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) System Survivability Assessments</p> <p>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.</p> <p>FY 2020 Plans: 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.</p> <p>FY 2021 Plans: Will conduct cyber and EW SLVA on network components as specified by the Network C3I CFT and AEC and on CCDC's highest priority Network/C3 and other systems. For systems supported working with materiel developers to constructively influence</p>		19.662	17.006	18.075

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
system design and providing 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 2020 to FY 2021 Increase/Decrease Statement: FY2021 increase supports anticipated mission requirements.				
Title: Survivability, Lethality, Vulnerability (SLV) Analyses for Developmental Air and Missile Defense Systems Description: Conduct integrated SLV analyses for developmental air and missile defense systems, pre-planned product improvements of current systems, and recently fielded systems. 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 2021 Plans: Will conduct high-priority SLVA on AMD systems and components as specified by AEC and CCDC. For systems supported working with materiel developers to constructively influence system design and providing relevant data to Army analytical community to support Analyses of Alternatives and other Army studies. FY 2020 to FY 2021 Increase/Decrease Statement: FY2021 increase supports anticipated mission requirements.		1.601	0.872	1.556
Title: FY 2018 NDAA SEC 825 MDAP Cost Overrun Description: FY 2018 NDAA SEC 825 MDAP Cost Overrun		0.002	-	-
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		-	1.593	-
Accomplishments/Planned Programs Subtotals		39.886	35.075	36.001

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