Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Army											Date: February 2018	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 1: *Basic Research*					R-1 Program Element (Number/Name) PE 0601103A / *University Research Sciences*							
COST ($ in Millions)	**Prior Years**	**FY 2017**	**FY 2018**	**FY 2019 Base**	**FY 2019 OCO**	**FY 2019 Total**	**FY 2020**	**FY 2021**	**FY 2022**	**FY 2023**	**Cost To Complete**	**Total Cost**
Total Program Element	-	66.506	67.027	65.283	-	65.283	65.858	67.214	68.552	69.923	0.000	470.363
D55: *University Research Initiative*	-	63.547	66.201	65.283	-	65.283	65.858	67.214	68.552	69.923	0.000	466.578
V72: *Minerva*	-	2.959	0.826	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.785

A. Mission Description and Budget Item Justification

This Program Element (PE) supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP), the Presidential Early Career Awards for Scientists and Engineers (PECASE) program, and the Army's efforts in the Minerva Research Initiative (MRI). The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g., Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers. The MRI is a university-based social science research program.

Work in this PE provides a foundation for applied research initiatives at the Army laboratories and research, development and engineering centers.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology priority focus areas and the Army Modernization Strategy.

B. Program Change Summary ($ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	69.166	67.027	65.283	-	65.283
Current President's Budget	66.506	67.027	65.283	-	65.283
Total Adjustments	-2.660	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-2.627	-			
• FFRDC	-0.033	-	-	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Sciences*	Project (Number/Name) D55 / *University Research Initiative*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
D55: *University Research Initiative*	-	63.547	66.201	65.283	-	65.283	65.858	67.214	68.552	69.923	0.000	466.578

A. Mission Description and Budget Item Justification

This Project supports the Multidisciplinary University Research Initiative (MURI), the Defense University Research Instrumentation Program (DURIP) and the Presidential Early Career Awards for Scientists and Engineers (PECASE) program. The MURI program funds university based basic research in a wide range of scientific and engineering disciplines pertinent to maintaining land combat technology superiority. Army MURI efforts involve teams of researchers investigating high-priority, transformational topics that intersect more than one traditional technical discipline (e.g. Intelligent Luminescence for Communication, Display, and Identification). For many complex problems, this multidisciplinary approach serves to accelerate research progress and expedite transition of results to application. The DURIP provides funds to acquire major research equipment to augment current, or devise new, research capabilities in support of Army transformational research. The PECASE program funds single-investigator research efforts performed by outstanding academic scientists and engineers early in their independent research careers.

Work in this Project provides a foundation for applied research initiatives at the Army laboratories and research, development and engineering centers.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering Science and Technology focus areas.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: Multidisciplinary University Research Initiative (MURI)	51.083	53.153	53.102
Description: MURI programs are typically 5 years in length at a cost of $1.25 million per year. ***FY 2018 Plans:*** Provide support for MURI awards made in prior years and identify six to eight new FY18 MURI awards to support basic science and/or engineering research at institutions of higher education that is of critical importance to national defense. ***FY 2019 Plans:*** Will provide support for MURI awards made in prior years and will identify six to eight new FY 19 MURI awards to enable advances in select interdisciplinary basic science and/or engineering research areas determined to be of critical importance to national defense. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding levels decreased to enable support of Presidential Early Career Awards for Scientists and Engineers (PECASE) program and the Army Single Investigator Basic Research Program.			
Title: Presidential Early Career Awards for Scientists and Engineers (PECASE)	4.373	4.574	4.581

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Sciences*	**Project (Number/Name)** D55 / *University Research Initiative*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Description: Supports PECASE investigators started in prior years. ***FY 2018 Plans:*** Support prior year awardees and select four new PECASE candidates. ***FY 2019 Plans:*** Will support prior year awardees and will select four new PECASE candidates. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding levels increased due to inflation.			
Title: Defense University Research Instrumentation Program (DURIP) ***Description:*** Supports basic research through competitive grants for research instrumentation. ***FY 2018 Plans:*** Evaluate proposals to award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research critical to Army transformation. ***FY 2019 Plans:*** Will evaluate and award competitive grants for research instrumentation to enhance universities' capabilities to conduct world class research and enhance educational capabilities critical to Army transformation. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Funding level decreased to enable support of the Army Single Investigator Basic Research Program.	8.091	8.474	7.600
Accomplishments/Planned Programs Subtotals	63.547	66.201	65.283

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army			Date: February 2018
Appropriation/Budget Activity 2040 / 1	R-1 Program Element (Number/Name) PE 0601103A / *University Research Sciences*	Project (Number/Name) V72 / *Minerva*	

COST ($ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
V72: *Minerva*	-	2.959	0.826	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	3.785

Note

This project terminates in FY18.

A. Mission Description and Budget Item Justification

This Project supports the Minerva Research Initiative (MRI), a university-based social science research program initiated by the Secretary of Defense in Fiscal Year (FY) 2009. It focuses on areas in the social sciences that are of strategic importance to national security policy which have not been substantially pursued in the past. The Minerva research effort will be performed to understand the internal military-political dynamics of repressive regimes, the vulnerabilities of regimes and institutions to various kinds of disruption and instability, the nature of crowd dynamics, group violence, community belief structures, the potential to influence public opinion and attitudes in diverse cultures, cultural effects on network security and military operations, the influence of technology on military capabilities of potential adversaries and allies, and other intersections of social-cultural issues with military activities and national security. Predictive models and other analysis tools will be developed. Leveraging the expertise in the social sciences within the academic community is needed to provide understanding of the roots of terrorist organizations and the challenges and opportunities for military operations in a culturally diverse environment. Better understanding at a fundamental level and new computational tools will provide a beneficial impact on war fighting capabilities at the national policy, military strategy, operational, and tactical levels, and will enhance the capabilities of intelligence activities at all levels. All research results are open source.

The cited work is consistent with the Assistant Secretary of Defense for Research and Engineering science and technology priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
Title: The Minerva Research Initiative (MRI)	2.959	0.826	-
Description: The MRI is a university-based social science research program initiated by the Secretary of Defense. It focuses on areas in the social sciences of strategic importance to national security policy. It seeks to increase the Department's intellectual capital in the social sciences and improve its ability to address future challenges and build bridges between the Department and the social science community. Minerva will bring together universities, research institutions, and individual scholars and support multidisciplinary and cross-institutional projects addressing specific topic areas determined by the Department.			
FY 2018 Plans: Create new quantitative models to detect vulnerabilities in government systems throughout the world that engender sociopolitical instability and susceptibility to hostile movements from both within a nation and from outside. The models focus on shifts in population movement that arise from interdependencies between economic markets, health, and natural resources needed			

Exhibit R-2A, RDT&E Project Justification: PB 2019 Army		Date: February 2018
Appropriation/Budget Activity 2040 / 1	**R-1 Program Element (Number/Name)** PE 0601103A / *University Research Sciences*	**Project (Number/Name)** V72 / *Minerva*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2017	FY 2018	FY 2019
to support social communities. This research will enable a capacity to detect emerging conflict zones before they erupt, and enabling an early capacity to stabilize at-risk regions. ***FY 2018 to FY 2019 Increase/Decrease Statement:*** Program ended and funds re-directed to support Social Scientific research, an underpinning knowledge base for enhanced Soldier performance leading to augmented Soldier Lethality.			
Accomplishments/Planned Programs Subtotals	2.959	0.826	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

N/A