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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 1: Basic Research</i>					R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>							
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	-	370.595	342.919	348.322	0.000	348.322	354.360	361.369	368.686	376.162	Continuing	Continuing
613001: <i>Physics and Electronics</i>	-	109.053	100.693	102.504	0.000	102.504	104.054	106.111	108.259	110.457	Continuing	Continuing
613002: <i>Aerospace, Chemical and Material Sciences</i>	-	116.284	106.172	107.763	0.000	107.763	109.712	111.883	114.149	116.464	Continuing	Continuing
613003: <i>Mathematics, Information and Life Sciences</i>	-	110.158	101.920	103.438	0.000	103.438	105.318	107.402	109.577	111.798	Continuing	Continuing
613004: <i>Education and Outreach</i>	-	35.100	34.134	34.617	0.000	34.617	35.276	35.973	36.701	37.443	Continuing	Continuing

A. Mission Description and Budget Item Justification

Defense Research Sciences consists of extramural research activities in academia and industry along with in-house investigations performed in the Air Force Research Laboratory (AFRL). This program supports fundamental broad-based scientific and engineering research in areas critical to Air Force weapon, sensor, and support systems. All research areas are subject to long-range planning and technical review by both Air Force and tri-Service scientific planning groups. Efforts in this program have been coordinated through the Department of Defense (DoD) Science and Technology (S&T) Executive Committee process to harmonize efforts and eliminate duplication.

In FY 2018, a portion of HQ AFRL S&T civilian manpower in PE 0601102F, Defense Research Sciences, was transferred to PE 0602298F, Science and Technology Management - Major Headquarters Activities, to provide increased transparency to Congress on personnel in Major Headquarters Activities (MHA).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver science & technology capabilities. The use of program funds in this PE would be in addition to the civilian pay expenses budgeted in program elements 0602102F, 0602201F, 0602202F, 0602203F, 0602204F, 0602601F, 0602602F, 0602605F, 0602788F, 1206601F, and 602298F."

This program is in Budget Activity 1, Basic Research, because this budget activity includes scientific study and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force				Date: February 2018		
Appropriation/Budget Activity		R-1 Program Element (Number/Name)				
3600: Research, Development, Test & Evaluation, Air Force I BA 1: Basic Research		PE 0601102F I Defense Research Sciences				
B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		340.812	342.919	348.323	0.000	348.323
Current President's Budget		370.595	342.919	348.322	0.000	348.322
Total Adjustments		29.783	0.000	-0.001	0.000	-0.001
• Congressional General Reductions		0.000	0.000			
• Congressional Directed Reductions		0.000	0.000			
• Congressional Rescissions		0.000	0.000			
• Congressional Adds		40.000	0.000			
• Congressional Directed Transfers		0.000	0.000			
• Reprogrammings		0.000	0.000			
• SBIR/STTR Transfer		-10.217	0.000			
• Other Adjustments		0.000	0.000	-0.001	0.000	-0.001
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 613001: Physics and Electronics						
Congressional Add: Program Increase - Basic Research						
						FY 2017
						FY 2018
						14.260
						0.000
Congressional Add Subtotals for Project: 613001						14.260
						0.000
Project: 613002: Aerospace, Chemical and Material Sciences						
Congressional Add: Program Increase - Basic Research						
						14.241
						0.000
Congressional Add Subtotals for Project: 613002						14.241
						0.000
Project: 613003: Mathematics, Information and Life Sciences						
Congressional Add: Program Increase - Basic Research						
						7.401
						0.000
Congressional Add Subtotals for Project: 613003						7.401
						0.000
Project: 613004: Education and Outreach						
Congressional Add: Program Increase - Basic Research						
						2.613
						0.000
Congressional Add Subtotals for Project: 613004						2.613
						0.000
Congressional Add Totals for all Projects						38.515
						0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 1					R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences				Project (Number/Name) 613001 / Physics and Electronics			
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
613001: Physics and Electronics	-	109.053	100.693	102.504	0.000	102.504	104.054	106.111	108.259	110.457	Continuing	Continuing
A. Mission Description and Budget Item Justification												
Basic research in the Physics and Electronics Project seeks to enable revolutionary advances and expand the fundamental knowledge supporting technologies critical to the future of the Air Force. Research stresses high-risk, far-term, game-changing capability breakthroughs essential for future leaps in warfighter system performance, functionality, reliability, and survivability while simultaneously reducing component and system power, size, mass, and life cycle costs. Major areas being investigated in this project are complex electronics and fundamental quantum processes; plasma physics and high energy density non-equilibrium processes; and lasers and optics, electromagnetics, communication, and signal processing. While the following specific sub-areas are the focus of the project, there is interest in exploring novel ideas that may bridge these major efforts as well as those in the other projects within this program.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Complex Electronics and Fundamental Quantum Processes									38.357	40.756	41.489	
Description: Scientific focus areas are atomic and molecular physics, photonics, quantum electronic solids, gigahertz-terahertz electronics and material, semiconductor and electromagnetic materials, and optoelectronics.												
FY 2018 Plans: Explore a wide range of complex materials and devices, including non-linear optical materials, photonics, optoelectronics, meta-materials, cathodes, dielectric and magnetic materials, memristive systems, new classes of high-temperature superconductors, quantum dots, quantum wells and graphene. Includes generating and controlling quantum states, such as superposition and entanglement, in photons and ultracold atoms and molecules.												
FY 2019 Plans: Continue to explore a wide range of complex materials and devices, including non-linear optical materials, photonics, optoelectronics, meta-materials, cathodes, dielectric and magnetic materials, memristive systems, new classes of high-temperature superconductors, quantum dots, quantum wells and graphene. Includes generating and controlling quantum states, such as superposition and entanglement, in photons and ultracold atoms and molecules.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.733 million. Justification for this increase is described in plans above.												
Title: Plasma Physics and High Energy Density Non-Equilibrium Processes									19.757	20.993	21.371	
Description: Scientific focus areas are plasma, electro-energetic physics and space sciences.												
FY 2018 Plans:												

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Appropriation/Budget Activity 3600 / 1		R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>		Project (Number/Name) 613001 / <i>Physics and Electronics</i>	
B. Accomplishments/Planned Programs (\$ in Millions)			FY 2017	FY 2018	FY 2019
Explore a wide range of activities characterized by processes sufficiently energetic to require understanding and managing plasma phenomenology and the non-linear response of materials to high electric and magnetic fields. Includes space weather, plasma discharges, RF propagation, RF-plasma interaction, and high-power, beam-driven microwave devices. FY 2019 Plans: Continue to explore a wide range of activities characterized by processes sufficiently energetic to require understanding and managing plasma phenomenology and the non-linear response of materials to high electric and magnetic fields. Includes space weather, plasma discharges, RF propagation, RF-plasma interaction, and high-power, beam-driven microwave devices. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.378 million. Justification for this increase is described in plans above.					
Title: Lasers and Optics, Electromagnetics, Communication and Signal Processing Description: Scientific focus areas are physical mathematics and applied analysis, novel computational methods, dynamics sensing capability, electromagnetics, remote sensing and imaging physics, and surveillance and navigation. FY 2018 Plans: Explore all aspects of producing and receiving electromagnetic and electro-optical signals, as well as their propagation through complex media, including adaptive optics and optical imaging. Continue to investigate aspects of the phenomenology of lasers including high energy lasers, non-linear optics, and ultra-short pulse laser science. Includes the development of sophisticated mathematics and algorithm development for extracting information from complex and/or sparse signals. FY 2019 Plans: Continue to explore all aspects of producing and receiving electromagnetic and electro-optical signals, as well as their propagation through complex media, including adaptive optics and optical imaging. Continue to investigate aspects of the phenomenology of lasers including high energy lasers, non-linear optics, and ultra-short pulse laser science. Includes the development of sophisticated mathematics and algorithm development for extracting information from complex and/or sparse signals. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.700 million. Justification for this increase is described in plans above.			36.679	38.944	39.644
Accomplishments/Planned Programs Subtotals			94.793	100.693	102.504
			FY 2017	FY 2018	
Congressional Add: Program Increase - Basic Research			14.260	0.000	

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018	
Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>	Project (Number/Name) 613001 / <i>Physics and Electronics</i>	
		FY 2017	FY 2018
FY 2017 Accomplishments: Conducted Congressionally directed effort.			
FY 2018 Plans: N/A			
Congressional Adds Subtotals		14.260	0.000
C. Other Program Funding Summary (\$ in Millions) N/A			
Remarks			
D. Acquisition Strategy N/A			
E. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 1					R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences				Project (Number/Name) 613002 / Aerospace, Chemical and Material 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
613002: Aerospace, Chemical and Material Sciences	-	116.284	106.172	107.763	0.000	107.763	109.712	111.883	114.149	116.464	Continuing	Continuing
A. Mission Description and Budget Item Justification												
Basic research in the Aerospace, Chemical, and Materials Sciences Project seeks to enable revolutionary advances and expand the fundamental knowledge supporting technologies critical to the future of the Air Force. Research stresses high-risk, far-term, game-changing capability breakthroughs essential for future leaps in warfighter system performance, functionality, reliability, and survivability while simultaneously reducing component and system power, size, mass, and life cycle costs. Major efforts being investigated in this project are aero-structure interactions and control; energy, power, and propulsion; and complex materials and structures. Although the major effort descriptions that follow are specific sub-areas of focus within this project, there is interest in exploring novel ideas that may bridge these major efforts as well as those in the other projects within this program.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
Title: Aero Structure Interactions and Control										30.090	31.295	31.763
Description: Scientific focus areas are high temperature aerospace materials, hypersonics, aerothermodynamics and turbulence, and flow interactions and control.												
FY 2018 Plans:												
Investigate the characterization, modeling, and exploitation of interactions between the unsteady aerodynamic flow field and the dynamic air vehicle structure to enable enhanced performance in next generation Air Force systems. Explore the synergy gained from an interdisciplinary look at multiple technologies and the integration of core disciplines of fluid mechanics, high-performance structures, and thermodynamics.												
FY 2019 Plans:												
Continue to investigate the characterization, modeling, and exploitation of interactions between the unsteady aerodynamic flow field and the dynamic air vehicle structure to enable enhanced performance in next generation Air Force systems. Explore the synergy gained from an interdisciplinary look at multiple technologies and the integration of core disciplines of fluid mechanics, high-performance structures, and thermodynamics.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
FY 2019 increased compared to FY 2018 by \$0.468 million. Justification for this increase is described in plans above.												
Title: Energy, Power, and Propulsion										32.420	33.763	34.269
Description: Scientific focus areas are thermal control, theoretical chemistry, molecular dynamics, space power and propulsion, and combustion and diagnostics.												

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Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences	Project (Number/Name) 613002 / Aerospace, Chemical and Material Sciences		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>FY 2018 Plans: Exploit technological innovations and develop potentially revolutionary technologies by integrating core disciplines of combustion, plasma dynamics, chemistry, hybrid simulation, and structures. Investigate processes associated with the generation, storage, and utilization of energy, specifically for Air Force systems. This includes developing novel energetic materials as well as understanding and optimizing combustion processes.</p> <p>FY 2019 Plans: Continue to exploit technological innovations and develop potentially revolutionary technologies by integrating core disciplines of combustion, plasma dynamics, chemistry, hybrid simulation, and structures. Investigate processes associated with the generation, storage, and utilization of energy, specifically for Air Force systems. This includes developing novel energetic materials as well as understanding and optimizing combustion processes.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.506 million. Justification for this increase is described in plans above.</p>				
<p>Title: Complex Materials and Structures</p> <p>Description: Scientific focus areas are mechanics of multifunctional materials and microsystems, multi-scale mechanics and prognosis, low density materials, and polymer chemistry.</p> <p>FY 2018 Plans: Investigate multifunctional materials and structures composed of different classes of materials, both organic and inorganic, that may be able to change functionality or performance characteristics to enhance the mission versatility of future air and space systems, with a key goal of increasing functionality while decreasing weight and volume. Explore complex materials, microsystems, and structures that incorporate hierarchical design and functionality from the nano-scale through the mesoscale, ultimately leading to controlled, well-understood material or structural behavior capable of dynamic functionality and/or performance characteristics to enhance mission versatility.</p> <p>FY 2019 Plans: Continue to investigate multifunctional materials and structures composed of different classes of materials, both organic and inorganic, that may be able to change functionality or performance characteristics to enhance the mission versatility of future air and space systems, with a key goal of increasing functionality while decreasing weight and volume. Explore materials, microsystems, and structures that incorporate hierarchical design and functionality from the nano-scale through the meso-scale, ultimately leading to controlled, well-understood material or structural behavior capable of dynamic functionality and/or performance characteristics to enhance mission versatility.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		39.533	41.114	41.731

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Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>	Project (Number/Name) 613002 / <i>Aerospace, Chemical and Material Sciences</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
FY 2019 increased compared to FY 2018 by \$0.617 million. Justification for this increase is described in plans above.			
Accomplishments/Planned Programs Subtotals		102.043	106.172
		FY 2017	FY 2018
Congressional Add: Program Increase - Basic Research		14.241	0.000
FY 2017 Accomplishments: Conducted Congressionally directed effort.			
FY 2018 Plans: N/A			
Congressional Adds Subtotals		14.241	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 1					R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences				Project (Number/Name) 613003 / Mathematics, Information and Life 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
613003: Mathematics, Information and Life Sciences	-	110.158	101.920	103.438	0.000	103.438	105.318	107.402	109.577	111.798	Continuing	Continuing
A. Mission Description and Budget Item Justification												
Basic research in the Mathematics, Information, and Life Sciences Project seeks to enable revolutionary advances and expand the fundamental knowledge supporting technologies critical to the future of the Air Force. Research stresses high-risk, far-term, game-changing capability breakthroughs essential for future leaps in warfighter system performance, functionality, reliability, and survivability while simultaneously reducing component and system power, size, mass, and life cycle costs. Major areas being investigated in this project are information and complex networks, decision making, dynamical systems, optimization and control, and natural materials and systems. While the following are specific sub-areas within this project, there is a continuing interest to explore novel ideas to bridge projects within this program.												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2017	FY 2018	FY 2019	
Title: Information and Complex Networks									26.207	25.982	26.369	
Description: Scientific focus areas are systems and software, information operations and security, information fusion, and complex networks.												
FY 2018 Plans:												
Design and analyze techniques to enable reliable and secure exchange of information and predictable operation of networks and systems, including hardware and software interactions. This includes traditional aspects of information assurance, software engineering, and reliable systems, but the emphasis is on the underlying mathematics of secure-by-design architectures of networked communications and neural information processing. Sub-areas include system and network performance prediction, design and analysis, and modeling of human-machine systems.												
FY 2019 Plans:												
Continue to design and analyze techniques to enable reliable and secure exchange of information and predictable operation of networks and systems. This includes traditional aspects of information assurance, software engineering, and reliable systems, but the emphasis is on the underlying mathematics of secure-by-design architectures of networked communications and neural information processing. Sub-areas include system and network performance prediction, design and analysis, and modeling of human-machine systems.												
FY 2018 to FY 2019 Increase/Decrease Statement:												
FY 2019 increased compared to FY 2018 by \$0.387 million. Justification for this increase is described in plans above.												
Title: Decision Making									20.438	20.263	20.565	

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Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences	Project (Number/Name) 613003 / Mathematics, Information and Life Sciences		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018	FY 2019
<p>Description: Scientific focus areas are mathematical modeling of cognition and decision making, trust between humans and autonomous agents, mixed human-machine decision making, and computational social science.</p> <p>FY 2018 Plans: Investigate new mathematical laws, scientific principles, and robust algorithms that underlie intelligent, mixed human-machine decision making to achieve accurate real-time projection of expertise and knowledge into and out of the battlespace. This includes efforts to advance the critical knowledge base in information sciences and information fusion, and to model individual and group cognitive processing and decision making.</p> <p>FY 2019 Plans: Continue to investigate new mathematical laws, scientific principles, and robust algorithms that underlie intelligent, mixed human-machine decision making to achieve accurate real-time projection of expertise and knowledge into and out of the battlespace. This includes efforts to advance the critical knowledge base in information sciences and information fusion, and to model individual and group cognitive processing and decision making.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.302 million. Justification for this increase is described in plans above.</p>				
<p>Title: Dynamical Systems, Optimization, and Control</p> <p>Description: Scientific focus areas are computational mathematics, dynamics and control, and optimization and discrete mathematics.</p> <p>FY 2018 Plans: Develop new scientific concepts supported by rigorous analysis for advancing the science of autonomy and promoting the understanding necessary to analyze and design complex multi-scale systems as well as provide guaranteed levels of performance. Develop novel adaptive control strategies for coordinating heterogeneous, autonomous, or semi-autonomous aerospace vehicles in uncertain, information rich, dynamically changing, adversarial, and networked environments.</p> <p>FY 2019 Plans: Continue to develop new scientific concepts supported by rigorous analysis for advancing the science of autonomy and promoting the understanding necessary to analyze and design complex multi-scale systems as well as provide guaranteed levels of performance. This includes developing novel adaptive control strategies for coordinating heterogeneous, autonomous, or semi-autonomous aerospace vehicles in uncertain, information rich, dynamically changing, adversarial, and networked environments.</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement:</p>		26.969	26.782	27.180

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Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>	Project (Number/Name) 613003 / <i>Mathematics, Information and Life Sciences</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
FY 2019 increased compared to FY 2018 by \$0.398 million. Justification for this increase is described in plans above.			
Title: Natural Materials and Systems Description: Scientific focus areas are natural materials and nature inspired systems, human performance and biosystems, cognitive neuroscience and biophysics FY 2018 Plans: Investigate multi-disciplinary approaches for studying, using, mimicking, synthesizing and adapting to the ways natural systems accomplish their required tasks. Study how to adapt and mimic existing natural sensory systems and add existing capabilities to these organisms with the intent to gain more precise control over their material production. FY 2019 Plans: Continue to investigate multi-disciplinary approaches for studying the ways natural systems accomplish their required tasks. Study how to adapt and mimic existing natural sensory systems and add existing capabilities to these organisms with the intent to gain more precise control over their material production. FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.431 million. Justification for this increase is described in plans above.		29.143	28.893
Accomplishments/Planned Programs Subtotals		102.757	101.920
		FY 2017	FY 2018
Congressional Add: Program Increase - Basic Research		7.401	0.000
FY 2017 Accomplishments: Conducted Congressionally directed effort.			
FY 2018 Plans: N/A			
Congressional Adds Subtotals		7.401	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force		Date: February 2018
Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>	Project (Number/Name) 613003 / <i>Mathematics, Information and Life Sciences</i>

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Air Force										Date: February 2018		
Appropriation/Budget Activity 3600 / 1					R-1 Program Element (Number/Name) PE 0601102F / Defense Research Sciences				Project (Number/Name) 613004 / Education and Outreach			
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
613004: Education and Outreach	-	35.100	34.134	34.617	0.000	34.617	35.276	35.973	36.701	37.443	Continuing	Continuing
A. Mission Description and Budget Item Justification												
The major efforts in the Science and Technology (S&T) Education and Outreach Project are to facilitate interactions between the international and domestic research communities and Air Force researchers, and to support and develop scientists and engineers with an awareness of Air Force basic research priorities. These professional interactions and collaborations benefit the Air Force by increasing awareness of Air Force basic research priorities in the research community as a whole, and attracting talented scientists and engineers to address Air Force needs. International interactions facilitate future interoperability of coalition systems and foster relationships with future coalition partners. This project also seeks to enhance interactions with Historically Black Colleges and Universities, Hispanic serving institutions, and other minority institutions.												
B. Accomplishments/Planned Programs (\$ in Millions)										FY 2017	FY 2018	FY 2019
Title: Outreach to International S&T Community										11.444	12.019	12.189
Description: Foster international S&T cooperation by supporting direct interchanges with a broad range of key international researchers and communities. Identify and leverage international scientific advances when appropriate.												
FY 2018 Plans: Leverage international expertise and support international technology liaison missions to identify and maintain awareness of foreign science and technology developments. Explore current foreign investments and influence world-class scientific research on specific topics of Air Force interest. Pursue access to technical information on foreign research capabilities within our interests. Support international visits by scientists and high-level DoD S&T delegations, and provide primary interface to coordinate international S&T participation among DoD organizations.												
FY 2019 Plans: Continue to leverage international expertise and support international technology liaison missions to identify and maintain awareness of foreign science and technology developments. Explore current foreign investments and influence world-class scientific research on specific topics of Air Force interest. Pursue access to technical information on foreign research capabilities within our interests. Support international visits by scientists and high-level DoD S&T delegations, and provide primary interface to coordinate international S&T participation among DoD organizations.												
FY 2018 to FY 2019 Increase/Decrease Statement: FY 2019 increased compared to FY 2018 by \$0.170 million. Justification for this increase is described in plans above.												
Title: Outreach to U.S. S&T Workforce										21.043	22.115	22.428
Description: Strengthen science, mathematics, and engineering research and infrastructure in the U.S., thereby strengthening current and future Air Force S&T capabilities.												

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Appropriation/Budget Activity 3600 / 1	R-1 Program Element (Number/Name) PE 0601102F / <i>Defense Research Sciences</i>	Project (Number/Name) 613004 / <i>Education and Outreach</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2017	FY 2018
<p><i>FY 2018 Plans:</i> Increase awareness of Air Force research needs and opportunities throughout the civilian scientific community, while simultaneously identifying, recruiting, and increasing opportunities for new young investigators to participate in critical Air Force research. Support science, mathematics, and engineering research, and educational outreach programs including Historically Black Colleges and Universities, Hispanic serving institutions, and other minority institutions.</p> <p><i>FY 2019 Plans:</i> Continue identifying, recruiting, and increasing opportunities for new young investigators to participate in critical Air Force research. Support science, mathematics, and engineering research including Historically Black Colleges and Universities, Hispanic serving institutions, and other minority institutions. Support science activities that encourage elementary/middle/high school youths to develop an interest in and pursue higher education and employment in the science, mathematics, and engineering (STEM) fields.</p> <p><i>FY 2018 to FY 2019 Increase/Decrease Statement:</i> FY 2019 increased compared to FY 2018 by \$0.313 million. Justification for this increase is described in plans above.</p>			
Accomplishments/Planned Programs Subtotals		32.487	34.134
		FY 2017	FY 2018
<i>Congressional Add:</i> Program Increase - Basic Research		2.613	0.000
<i>FY 2017 Accomplishments:</i> Conducted Congressionally directed effort.			
<i>FY 2018 Plans:</i> N/A			
Congressional Adds Subtotals		2.613	0.000
C. Other Program Funding Summary (\$ in Millions)			
N/A			
Remarks			
D. Acquisition Strategy			
N/A			
E. Performance Metrics			
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.			