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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0606942F / <i>Assessments and Evaluations Cyber Vulnerabilities</i>
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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	-	84.908	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.908
677821: <i>Cyberspace Vulnerability Assessment</i>	-	84.908	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	84.908
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This program funds cyber vulnerability assessments of Air Force weapons systems and critical infrastructure as well as non-recurring engineering for mitigations. The effort leverages the methodology described in the Air Force Cyber Campaign Plan (CCP) to provide Air Force mission assurance in a cyber-contested environment. Under the Air Force CCP, the Air Force is accomplishing work mandated by Section 1647 of the Fiscal Year (FY) 2016 National Defense Authorization Act (NDAA) and Section 1650 of the FY 2017 NDAA. Section 1647 of the FY 2016 NDAA directs the Secretary of Defense to complete an evaluation of the cyber vulnerabilities of each major weapon system of the Department of Defense. Section 1650 of the FY 2017 NDAA mandates the Secretary of Defense submit a plan for assessing the cyber vulnerability of critical defense infrastructure and begin assessments of this infrastructure. This funding focuses on aspects of the Air Force CCP that develop processes, products, and people to perform the short term goals of conducting system cyber vulnerability assessments, cyber mitigations, and pilot programs and work toward the long term goal of achieving an enduring cyber resilient Air Force. The program builds upon existing efforts regarding the identification and mitigation of cyber vulnerabilities, and does not duplicate similar ongoing efforts or conduct redundant assessments on systems that have already been evaluated.

In addition, this program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. It may also include necessary civilian pay expenses required to perform analysis and developmental activities required in support of the transition of weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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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	87.800	0.000	0.000	0.000	0.000	
Current President's Budget	84.908	0.000	0.000	0.000	0.000	
Total Adjustments	-2.892	0.000	0.000	0.000	0.000	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	0.000				
• Congressional Rescissions	0.000	0.000				
• Congressional Adds	0.000	0.000				
• Congressional Directed Transfers	0.000	0.000				
• Reprogrammings	0.000	0.000				
• SBIR/STTR Transfer	-2.892	0.000				
• Other Adjustments	0.000	0.000	0.000	0.000	0.000	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2019	FY 2020	FY 2021
Title: Address Weapon System Cyber Vulnerabilities				10.929	0.000	0.000
Description: Develop processes, products, and people to conduct weapon system cyber vulnerability assessments, cyber mitigations, demonstrations, and pilot programs toward the long term goal of achieving an enduring cyber resilient Air Force.						
FY 2020 Plans: This effort completed in FY 2019.						
FY 2021 Plans: Not Applicable						
FY 2020 to FY 2021 Increase/Decrease Statement: Not Applicable						
Title: Address Infrastructure Cyber Vulnerabilities				68.309	0.000	0.000
Description: Develop processes, products, and people to conduct infrastructure/control systems/Operational Technology cyber vulnerability assessments, cyber mitigations, demonstrations, and pilot programs toward the long term goal of achieving an enduring cyber resilient Air Force.						
FY 2020 Plans: This effort completed in FY 2019.						
FY 2021 Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Not Applicable				
FY 2020 to FY 2021 Increase/Decrease Statement: Not Applicable				
Title: Exercise Participation		5.670	0.000	0.000
Description: This effort supports exercise participation, Combatant Command support, and assessment team activities to validate candidate weapon system and infrastructure cyber vulnerabilities.				
FY 2020 Plans: This effort completed in FY 2019.				
FY 2021 Plans: Not Applicable				
FY 2020 to FY 2021 Increase/Decrease Statement: Not Applicable				
Accomplishments/Planned Programs Subtotals		84.908	0.000	0.000
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapons Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.				

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0606942F / Assessments and Evaluations Cyber Vulnerabilities	Project (Number/Name) 677821 / Cyberspace Vulnerability Assessment
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Industry Collaboration for Critical Infrastructure Mitigations (1650)	TBD	Various : TBD	-	10.000	Jan 2019	0.000		0.000		-		0.000	0.000	10.000	-
More Situational Awareness for Industrial Control Systems (MOSAICS) SANDIA	MIPR	Albuquerque, NM : TBD	-	2.075	May 2019	0.000		0.000		-		0.000	0.000	2.075	-
More Situational Awareness for Industrial Control Systems (MOSAICS) SPAWAR	MIPR	North Charleston, SC : TBD	-	0.300	Apr 2019	0.000		0.000		-		0.000	0.000	0.300	-
Subtotal			-	12.375		0.000		0.000		-		0.000	0.000	12.375	N/A

Remarks
In FY 2019, the Office of the Undersecretary of Defense for Acquisition, Technology, and Logistics transitioned the responsibility of funding NDAA 1647 and 1650 activities directly to the Services.

Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Exercise and Assessment Team Participation (STRATCOM)	TBD	Various : TBD	-	4.000	Jan 2019	0.000		0.000		-		0.000	0.000	4.000	-
Booz Allen Hamilton Contractor Support (1647)	Various	Rome, NY : TBD	-	1.400	May 2019	0.000		0.000		-		0.000	0.000	1.400	-
Subtotal			-	5.400		0.000		0.000		-		0.000	0.000	5.400	N/A

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Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
346th Test Squadron - More Situational Awareness for Industrial Control Systems (MOSAICS)	PO	San Antonio, TX : TBD	-	0.225	Sep 2019	0.000		0.000		-		0.000	0.000	0.225	-
47th Test Squadron - More Situational Awareness for Industrial Control Systems (MOSAICS)	PO	Albuquerque, NM : TBD	-	0.400	Mar 2019	0.000		0.000		-		0.000	0.000	0.400	-
Air Force Operational Test and Evaluation Center (1647)	Various	Various : TBD	-	6.729	Apr 2019	0.000		0.000		-		0.000	0.000	6.729	-
Air Force Test Center (1647)	PO	Valparaiso, FL : TBD	-	18.500	Feb 2019	0.000		0.000		-		0.000	0.000	18.500	-
Cyber Testing for Weapon Systems (1647)	Various	Various : TBD	-	0.995	Aug 2019	0.000		0.000		-		0.000	0.000	0.995	-
RQ4 Assessment Support (1647)	MIPR	Dayton, OH : TBD	-	2.200	Nov 2018	0.000		0.000		-		0.000	0.000	2.200	-
Critical Infrastructure Assessments (1650)	Various	Various : TBD	-	37.834	Jan 2019	0.000		0.000		-		0.000	0.000	37.834	-
Subtotal			-	66.883		0.000		0.000		-		0.000	0.000	66.883	N/A

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	Various	Various : TBD	-	0.250		0.000		0.000		-		0.000	0.000	0.250	-
Subtotal			-	0.250		0.000		0.000		-		0.000	0.000	0.250	N/A

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	Prior Years	FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	84.908		0.000		0.000		-		0.000	0.000	84.908	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force		Date: February 2020
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FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Cyberspace Vulnerability Assessment																											
Conduct cyber vulnerability assessments for weapon systems																											
Develop and assess prototype weapon system cyber mitigations																											
Conduct Category 1 cyber vulnerability assessments for infrastructure																											
Conduct Category 2 cyber vulnerability assessments for infrastructure																											
Develop and assess infrastructure prototype cyber mitigations																											
Participate in exercises and red team activities																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cyberspace Vulnerability Assessment</i>				
Conduct cyber vulnerability assessments for weapon systems	1	2019	4	2020
Develop and assess prototype weapon system cyber mitigations	1	2019	4	2020
Conduct Category 1 cyber vulnerability assessments for infrastructure	2	2019	2	2020
Conduct Category 2 cyber vulnerability assessments for infrastructure	4	2019	4	2020
Develop and assess infrastructure prototype cyber mitigations	1	2019	4	2020
Participate in exercises and red team activities	1	2019	4	2020