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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force	Date: February 2019
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support					R-1 Program Element (Number/Name) PE 0604256F I Threat Simulator Development							
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	-	34.777	34.206	59.693	0.000	59.693	63.925	44.844	36.577	31.717	Continuing	Continuing
662907: <i>Electronic Combat Intel Support</i>	-	2.474	2.556	2.603	0.000	2.603	2.648	2.704	2.753	2.802	Continuing	Continuing
663321: <i>Electronic Warfare Ground Test Resources</i>	-	25.261	24.409	49.714	0.000	49.714	53.774	34.481	26.027	20.977	Continuing	Continuing
667500: <i>Foreign Materiel Acquisition/Analysis</i>	-	7.042	7.241	7.376	0.000	7.376	7.503	7.659	7.797	7.938	Continuing	Continuing

A. Mission Description and Budget Item Justification

The AF requires a comprehensive set of indoor and outdoor test facilities to implement the Air Force Electronic Warfare (EW) Test Process in order to test EW systems, including Directed Energy (DE). To manage program risk effectively throughout the EW weapons system acquisition process, and to conduct T&E effectively and efficiently, a broad multi-spectrum integrated set of T&E capabilities, ranging from Modeling and Simulation (M&S), to full-scale chamber testing, to flight testing on open-air ranges (OAR), is required. The EW Test Process Support task provides investment management and coordinated technical oversight of EW T&E facilities, including studies, analyses, and related documentation. Additionally, successful EW capabilities in battle are predicated upon a thorough understanding of the threat. To meet that requirement, this PE also includes funding to acquire foreign materiel, and to thoroughly test and evaluate that foreign materiel to understand how those threat systems affect and are affected by our EW systems.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support		PE 0604256F I Threat Simulator Development			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	35.405	34.256	46.393	0.000	46.393
Current President's Budget	34.777	34.206	59.693	0.000	59.693
Total Adjustments	-0.628	-0.050	13.300	0.000	13.300
• Congressional General Reductions	-0.031	-0.050			
• 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	-0.597	0.000			
• Other Adjustments	0.000	0.000	13.300	0.000	13.300
Change Summary Explanation					
FY20: AF increased funding by \$13.3M to support the National Radar Cross Section Test Facility Dynamic Radar Cross Section Range (NRTF Dynamic RCS) improvement and modernization effort.					

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Exhibit R-2A, RDT&E Project Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 662907 / Electronic Combat Intel Support			
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
662907: Electronic Combat Intel Support	-	2.474	2.556	2.603	0.000	2.603	2.648	2.704	2.753	2.802	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
This project provides funding to support Foreign Materiel Operational Test and Evaluation (FMOT&E), which ensures the ability of operational commands to test and develop effective Electronic Attack/Electronic Protection (EA/EP) techniques and tactics. Funds are required for: deployment of systems to test facilities; travel of personnel to the test sites to evaluate and validate test results; range and laboratory costs; test consumables; costs for instrumentation of systems; and contracted engineering support for the conduct of tests and subsequent reporting. Funding for this program is required to prevent future aircraft losses due to improper and inaccurate aircrew tactics (e.g., lack of evasive action or proper tactics training to avoid missile attack).												
B. Accomplishments/Planned Programs (\$ in Millions)									FY 2018	FY 2019	FY 2020	
Title: FMOT&E									2.474	2.556	2.603	
Description: Supports Foreign Materiel Operational Test and Evaluation (FMOT&E)												
FY 2019 Plans: Continue operations of electronic combat intelligence support for fighter and bomber testing, mobility special operations transport and helicopter testing, classified operational assessments and extensive evaluations and reporting of system effectiveness.												
FY 2020 Plans: Continue operations of electronic combat intelligence support for fighter and bomber testing, mobility special operations transport and helicopter testing, classified operational assessments and extensive evaluations and reporting of system effectiveness.												
FY 2019 to FY 2020 Increase/Decrease Statement: Not applicable.												
Accomplishments/Planned Programs Subtotals									2.474	2.556	2.603	
C. Other Program Funding Summary (\$ in Millions)												
Line Item	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	
• RDTE 06 PE 0604759F: Major T&E Investment	111.138	216.844	181.663	-	181.663	164.005	142.090	81.386	81.843	Continuing	Continuing	

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Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 662907 / Electronic Combat Intel Support			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• RDTE 06 PE 0605807F: Test and Evaluation Support	735.688	692.784	717.895	-	717.895	721.615	761.252	765.736	779.877	Continuing	Continuing
• RDTE 06 PE 0605976F: Facility Restoration and Modernization - T&E	135.507	187.216	88.445	-	88.445	69.293	70.730	72.019	73.315	Continuing	Continuing
• RDTE 06 PE 0605978F: Facility Sustainment - T&E Support	28.720	28.888	29.424	-	29.424	29.935	30.555	31.112	31.673	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Not applicable.											
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 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 663321 / Electronic Warfare Ground Test Resources			
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
663321: Electronic Warfare Ground Test Resources	-	25.261	24.409	49.714	0.000	49.714	53.774	34.481	26.027	20.977	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funding to improve and modernize threat system simulators, stimulators, emitters and supporting infrastructure used to sufficiently and cost-effectively test and evaluate current and new weapon systems in threat-representative environments. The National Radar Cross Section (RCS) Test Facility (NRTF) at Holloman AFB, NM, provides timely, accurate, and secure RCS and antenna measurements for tri-service and joint program offices, DoD laboratories, Defense Advanced Research Projects Agency (DARPA) and industry. The NRTF tests fielded and developmental systems and technologies to meet Low Observable (LO) and EW customer requirements. The Guided Weapons Evaluation Facility (GWEF) at Eglin AFB, FL, and the Digital Integrated Air Defense System (DIADS) at Edwards AFB, CA, provide the ability to realistically evaluate hardware and software components of US weapon systems against manned hardware threat representations throughout the acquisition process. The GWEF provides simulations of advanced Infrared (IR) Surface-to-Air Missiles (SAMs) and Air-to-Air Missiles (AAMs), IR and Laser countermeasure functions, and the integration of actual threat hardware and ground clutter into advanced threat IR missile simulations. DIADS provides both algorithm-based and man-in-the-loop-based enemy command and control (C2) capabilities that integrate early warning radar detection, SAM engagement capabilities, and limited ground-controlled fighter intercept features in a comprehensive M&S environment. The Benefield Anechoic Facility (BAF) at Edwards AFB, CA, and the Joint Preflight Integration of Munitions and Electronic Systems (J-PRIMES) facility at Eglin AFB, FL, both provide threat-representative EW emitters and stimulators to replicate a variety of land, sea and airborne threats in a controlled RF environment to evaluate full-scale weapon systems. The BAF additionally provides an ability to perform Electromagnetic Interference/Compatibility (EMI/EMC) testing to ensure radars, jammers, radios, and other flight-critical electronic systems will not interfere with each other during a mission. The Central Inertial and GPS Test Facility (CIGTF) at the 704th Test Group at Holloman AFB, NM provides threat-representative GPS jammers and laydowns in both lab and open-air environments to test avionics systems' performance when under various GPS-denial conditions.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020
Title: I&M	16.046	22.713	29.590
Description: Provides for planning and improvement & modernization (I&M) of test capabilities to conduct and support the AF EW test process, including DE. Plans for FY2019 and FY2020 include, but are not limited to, the following improvement and modernization efforts which may be accelerated or delayed due to variations in customer requirements and overall project execution.			
FY 2019 Plans: Red Integrated Air Defense System (Red-IADS), Electronics Warfare Test Capability Improvement Program (EWTCIP), Jammer Electronic Counter Measures Enhancement and Integration, National RCS Test Facility (NRTF) Modernization and Measurement			

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Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>	Project (Number/Name) 663321 / <i>Electronic Warfare Ground Test Resources</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020
<p>programs begin in FY19. IR EW Threat Simulators (IREWTS), NEWEG for J-PRIMES (NEWEG-J) and CIGTF GPS NAVWAR Upgrade (CGNU) programs continue executing development, procurement and integration as appropriate.</p> <p>FY 2020 Plans: Continue Red Integrated Air Defense System (Red-IADS), Electronics Warfare Test Capability Improvement Program (EWTCIP), Jammer Electronic Counter Measures Enhancement and Integration, National RCS Test Facility (NRTF) Modernization and Measurement programs which began in FY19. NEWEG for J-PRIMES (NEWEG-J) and CIGTF GPS NAVWAR Upgrade (CGNU) programs continue executing development, procurement and integration as appropriate.</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: \$6.877 million overall increase due to \$13.3 million funding increase of the National Dynamic Radar Cross Section Range improvement and modernization effort and a \$6.423 million decrease due to conclusion of Advanced Warfare T&E Capability (AWTEC) and IREWTS projects; and a decrease in on-going project funding such as Red IADS and NEWEG for J-PRIMES.</p>				
<p>Title: EC Test Process Support</p> <p>Description: Electronic Combat (EC) Test Process Support. Conduct requirements analyses and other studies in support of Air Force T&E investments in test infrastructure and capabilities.</p> <p>FY 2019 Plans: Continue to provide SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members will continue to support tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members will help manage and monitor I&M program elements and activities.</p> <p>FY 2020 Plans: Continue to provide SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members will continue to support tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members will help manage and monitor I&M program elements and activities.</p> <p>FY 2019 to FY 2020 Increase/Decrease Statement: \$18.428 million increase due to ramp up of the Fifth Generation Aerial Target Evaluation (5GATE) effort.</p>		9.215	1.696	20.124
Accomplishments/Planned Programs Subtotals		25.261	24.409	49.714

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Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 663321 / Electronic Warfare Ground Test Resources			
C. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• RDTE 06 PE 0604759F: Major T&E Investment	111.138	216.844	181.663	-	181.663	164.005	142.090	81.386	81.843	Continuing	Continuing
• RDTE 06 PE 0605807F: Test and Evaluation Support	735.688	692.784	717.895	-	717.895	721.615	761.252	765.736	779.877	Continuing	Continuing
• RDTE 06 PE 0605976: Facility Restoration & Modernization - T&E	135.507	187.216	88.445	-	88.445	69.293	70.730	72.019	73.315	Continuing	Continuing
• RDTE 06 PE 0605978F: Facilities Sustainment - T&E Support	28.720	28.888	29.424	-	29.424	29.935	30.555	31.112	31.673	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
NA											
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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Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / Threat Simulator Development				Project (Number/Name) 667500 / Foreign Materiel Acquisition/ 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
667500: Foreign Materiel Acquisition/Analysis	-	7.042	7.241	7.376	0.000	7.376	7.503	7.659	7.797	7.938	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project's specific purpose is to support USAF Foreign Materiel Program requirements through the acquisition and analysis of foreign materiel. Items considered for these Foreign Materiel Acquisition (FMA) funds are included in the prioritized Air Force FMA Top 20 list established each year. Each Major Command (MAJCOM) prepares and approves a Foreign Materiel - Mission Requirements Statement for each requirement. Annually, the MAJCOM commanders establish a list of their top 20 requirements. The MAJCOMs' requirements lists are integrated and prioritized into a classified Air Force requirement list. Each MAJCOM then approves the FMA Top 20 List and final validation comes from the Air Force Vice Chief of Staff. System analyses are based on and driven by acquisitions. The USAF provides assessments and data for threat systems to all DoD components.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2018	FY 2019	FY 2020
Title: FMP	7.042	7.241	7.376
Description: Supports USAF Foreign Materiel Program (FMP) Requirements through the acquisition and analysis of foreign materiel.			
FY 2019 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
FY 2020 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
FY 2019 to FY 2020 Increase/Decrease Statement: Not applicable.			
Accomplishments/Planned Programs Subtotals	7.042	7.241	7.376

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C. Other Program Funding Summary (\$ in Millions)											
			<u>FY 2020</u>	<u>FY 2020</u>	<u>FY 2020</u>					<u>Cost To</u>	
<u>Line Item</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>Complete</u>	<u>Total Cost</u>
• RDTE 06 PE 0604759F: Major T&E Investment	111.138	216.844	181.663	-	181.663	164.005	142.090	81.386	81.843	Continuing	Continuing
• RDTE 06 PE 0605807F: Test and Evaluation Support	735.688	692.784	717.895	-	717.895	721.615	761.252	765.736	779.877	Continuing	Continuing
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Remarks											
D. Acquisition Strategy											
Not applicable.											
E. Performance Metrics											
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