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**Exhibit P-40, Budget Line Item Justification:** PB 2020 Air Force **Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
3080F: Other Procurement, Air Force / BA 03: Electronics and Telecommunications  
Equip / BSA 4: Spcl Comm-Electronics Projects

**P-1 Line Item Number / Title:**  
834190 / Combat Training Ranges

**ID Code** (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** 0207429F **Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Procurement Quantity ( <i>Units in Each</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Cost ( <i>\$ in Millions</i> )	5.381	89.776	235.198	233.993	-	233.993	193.955	222.772	175.130	178.283	-	1,334.488
Less PY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Net Procurement (P-1) ( <i>\$ in Millions</i> )	5.381	89.776	235.198	233.993	-	233.993	193.955	222.772	175.130	178.283	-	1,334.488
Plus CY Advance Procurement ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Obligation Authority</b> ( <i>\$ in Millions</i> )	<b>5.381</b>	<b>89.776</b>	<b>235.198</b>	<b>233.993</b>	-	<b>233.993</b>	<b>193.955</b>	<b>222.772</b>	<b>175.130</b>	<b>178.283</b>	-	<b>1,334.488</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares ( <i>\$ in Millions</i> )	-	8.188	6.435	2.322	-	2.322	8.252	19.100	0.725	0.738	-	45.760
Flyaway Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gross/Weapon System Unit Cost ( <i>\$ in Millions</i> )	-	-	-	-	-	-	-	-	-	-	-	-

**Description:**

The Combat Training Ranges (CTR) program procures electronic telecommunication and instrumentation equipment and threat systems for training ranges worldwide to satisfy air combat and electronic warfare (EW) training capability requirements. It also procures range scoring systems and replacement equipment for electronics no longer logistically supportable. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.

**JOINT THREAT EMITTER (JTE):** The Joint Threat Emitter is designed to train aircrews to survive in a combat environment against Surface-to-Air Missile (SAM) and Air Defense Artillery (ADA) threats. The JTE simulates a range of threat signals, in multiple emitter kits, which interact with the aircraft radar warning receiver and electronic countermeasure system to provide realistic EW training environments for aircrew. The JTE leverages Commercial-Off-The Shelf (COTS) where possible to provide digital signal generation and feedback across its range of threats. The JTE system uses a Command-and-Control Unit (C2U) to operate a Threat Emitter Unit (TEU) producing a realistic threat environment for 4th and 5th Generation aircraft. Funding will also be used to purchase services applicable to the acquisition, site activation and implementation of the ground system including range site surveys, installation and training. The program procures new systems, retrofits fielded legacy JTE systems, and procures modifications for obsolete components for the fielded JTE fleet to extend their serviceable life.

**ADVANCED RADAR THREAT SYSTEM VARIANT 2 (ARTS-V2):** The ARTS-V2 program will procure a threat system simulator based on an advanced tactical, mobile, short/medium range foreign fielded SAM radar threat system. ARTS-V2 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may train against ARTS-V2, but the most stringent requirements placed on ARTS-V2 design come from 5th generation aircraft capabilities.

**RANGE EQUIPMENT:** This effort delivers range infrastructure and equipment in order to monitor and control an extended, realistic target environment for simulated ordnance delivery and provide scoring, feedback and debriefing to the aircrew. This effort includes, but is not limited to, the Joint Advanced Weapon Scoring System (JAWSS) program, which consists of Navy-developed scoring and feedback systems that provide weapon impact and laser spot scoring on bombing and gunnery ranges, EW threat subsystems such as noise and spoofing jammers and ground based laser countermeasures and directed lasers as well as radar and detection systems, data link connectivity, target shells, simulations and concealments, Integrated Air Combat Training instrumentation for range-less and tethered ground systems, and Range Safety Systems. This program may also procure small quantities of threat systems not currently in Air Force inventory.

**RANGE COMMUNICATIONS:** The Range Infrastructure Modernization Communication (RIMCOMM) program provides communication systems to connect various air defense threat radar simulation systems on Air Force ranges to simulate an integrated air defense system (IADS) and to provide blue force command and control for range operations. Infrastructure modernization includes replacing obsolete equipment,

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**Exhibit P-40, Budget Line Item Justification:** PB 2020 Air Force **Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
3080F: Other Procurement, Air Force / BA 03: Electronics and Telecommunications  
Equip / BSA 4: Spcl Comm-Electronics Projects

**P-1 Line Item Number / Title:**  
834190 / Combat Training Ranges

**ID Code** (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** 0207429F **Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

establishing a common infrastructure to support War Rooms and a future Live Mission Operations Capability (LMOC) enabling improved mission debriefs and Live, Virtual, Constructive (LVC) aircrew training, and standardization of all training range communications systems to support LVC training missions. This program focuses on procurement of range communication infrastructure equipment, including fiber optic cabling, microwave, Ultra High Frequency (UHF), and Very High Frequency (VHF) radios and antennas, data links and repeater stations, power subsystems, control systems, Air Combat Training System (ACTS) ground systems, and cryptological equipment for unclassified and secure communications for all Combat Training Ranges, in addition to studies, analysis, and integration efforts for range command and control, LVC training, and enhanced debrief capabilities.

LEGACY SYSTEMS: This program procures modifications for multiple obsolete legacy range threat systems (RTS) to extend their serviceable life. Legacy range threat systems include Multiple Threat Emitter System (MUTES), Miniature Multiple Threat Emitter System (Mini-MUTES), Modular Threat Emitter (MTE) system, Tactical Radar Threat Generator (TRTG) system, Band Simulator (Band Sim), Unmanned Modular Threat Emitter (UMTE) system, legacy Joint Threat Emitter (JTE) systems and other radar systems fielded throughout the combat training range enterprise. The program may procure depot stand-up tools such as software support workstations.

COMMON ELECTRONIC ATTACK RECEIVER (CEAR): The CEAR program replaces the obsolete Electronic Attack Receivers (EAR) on legacy threat systems such as the Unmanned Threat Emitter (UMTE), the Joint Threat Emitter (JTE), and the Miniature-Multiple Unmanned Threat Emitter System (Mini-MUTES). The CEAR provides real-time and recorded electronic warfare feedback to Combat Air Force (CAF) aircrews, improving their survivability in anti-access/area denial combat environments.

Funding for this exhibit contained in PE 0207429F Combat Training Ranges

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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.

Secondary Distribution		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024
AF	Quantity	8	9	9	0	9	-	-	-	-
	Total Obligation Authority	80.232	195.198	233.993	0.000	233.993	0.000	-	-	-
AFNG	Quantity	2	6	0	0	0	-	-	-	-
	Total Obligation Authority	9.544	40.000	0.000	0.000	0.000	-	-	-	-
AFR	Quantity	0	0	0	0	0	-	-	-	-
	Total Obligation Authority	0.000	0.000	0.000	0.000	0.000	-	-	-	-
<b>Total: Secondary Distribution</b>	<b>Quantity</b>	<b>10</b>	<b>15</b>	<b>9</b>	<b>0</b>	<b>9</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>Total Obligation Authority</b>	<b>89.776</b>	<b>235.198</b>	<b>233.993</b>	<b>0.000</b>	<b>233.993</b>	<b>0.000</b>	<b>-</b>	<b>-</b>	<b>-</b>

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**Exhibit P-40, Budget Line Item Justification:** PB 2020 Air Force **Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:** 3080F: Other Procurement, Air Force / BA 03: Electronics and Telecommunications Equip / BSA 4: Spcl Comm-Electronics Projects **P-1 Line Item Number / Title:** 834190 / Combat Training Ranges

**ID Code** (A=Service Ready, B=Not Service Ready): A **Program Elements for Code B Items:** 0207429F **Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

Exhibits Schedule					Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/MAIS Code	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)
P-5	Advanced Radar Threat System V2	P-5a	B		- / -	- / -	- / -	- / 23.761	- / -	- / 23.761
P-40a	CEAR MODS				- / 0.000	- / 0.300	- / 9.425	- / 1.000	- / 0.000	- / 1.000
P-5	DTR		A		- / -	- / -	- / 0.750	- / 0.750	- / -	- / 0.750
P-5	JTE	P-5a	A		- / -	10 / 43.346	12 / 88.379	7 / 19.708	- / -	7 / 19.708
P-40a	JTE				- / 5.381	- / 3.650	- / 1.707	- / 1.735	- / 0.000	- / 1.735
P-40a	RIMCOMM AND RANGE EQUIP				- / -	- / 42.480	- / 134.937	- / 187.039	- / -	- / 187.039
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / 5.381</b>	<b>- / 89.776</b>	<b>- / 235.198</b>	<b>- / 233.993</b>	<b>- / -</b>	<b>- / 233.993</b>

Exhibits Schedule					FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Exhibit Type	Title*	Subexhibits	ID CD	MDAP/MAIS Code	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)	Quantity / Total Cost (Each) / (\$ M)
P-5	Advanced Radar Threat System V2	P-5a	B		- / -	- / -	- / -	- / -	- / -	- / -
P-40a	CEAR MODS				- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 10.725
P-5	DTR		A		- / -	- / -	- / -	- / -	- / -	- / -
P-5	JTE	P-5a	A		- / -	- / -	- / -	- / -	- / -	- / -
P-40a	JTE				- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 0.000	- / 12.473
P-40a	RIMCOMM AND RANGE EQUIP				- / -	- / -	- / -	- / -	- / -	- / -
<b>P-40</b>	<b>Total Gross/Weapon System Cost</b>				<b>- / 193.955</b>	<b>- / 222.772</b>	<b>- / 175.130</b>	<b>- / 178.283</b>	<b>- / -</b>	<b>- / 1,334.488</b>

\*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications. Title represents the P-40a Title when only the P-40a Summary/Total is shown.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**

This program, ARTS V2 P-5, is a new start.

JTE: FY20 funding provides funding for procurement of one Threat Emitter Unit (TEU), retrofit kits and support for acceptance testing and fielding of JTE threat emitter units to include the TEU, Wideband Threat Emitter Unit (WTEU), command and control units, and associated support equipment.

ARTS-V2: FY20 funding procures one ARTS-V2 threat simulator system (which includes the radar cross section shell).

RANGE INFRASTRUCTURE MODERNIZATION COMMUNICATIONS (RIMCOMM): FY20 funding supports range communications equipment to provide an integrated air defense system (IADS) capability on Air Force ranges. Program will focus on continued investment in enabling equipment, studies and analyses to support integration efforts for a future Live Mission Operations Capability (LMOC), enabling improved mission debriefs and Live, Virtual, Constructive (LVC) aircrew training as well as procurement of equipment for all combat training ranges.

LEGACY SYSTEMS: The program will use funding to support and manage the control shelter and pedestal acquisition efforts.

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<b>Exhibit P-40, Budget Line Item Justification:</b> PB 2020 Air Force		<b>Date:</b> March 2019
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F: Other Procurement, Air Force / BA 03: Electronics and Telecommunications Equip / BSA 4: Spcl Comm-Electronics Projects		<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges
<b>ID Code</b> (A=Service Ready, B=Not Service Ready): A	<b>Program Elements for Code B Items:</b> 0207429F	<b>Other Related Program Elements:</b> N/A
<b>Line Item MDAP/MAIS Code:</b> N/A		
RANGE EQUIPMENT: FY20 supports the replacement and expansion of range infrastructure and equipment that is no longer logistically supportable in order to monitor and control an extended, realistic target environment for simulated ordnance delivery and aircrew training for airborne laser designators.		
CEAR: FY20 funding procures additional CEARs to modify UMTE threat emitter systems to replace obsolete electronic attack receivers.		
<b>Efforts with funding starting in FY 2021 through FY 2024 are summarized on the P-40. Not all details of this funding are included in this P-40 exhibit set. A summary of the excepted details is as follows:</b>		
<ul style="list-style-type: none"><li>(a) FY 2021 Cost Delta: 193.955 million</li><li>(b) FY 2022 Cost Delta: 222.772 million</li><li>(c) FY 2023 Cost Delta: 175.130 million</li><li>(d) FY 2024 Cost Delta: 178.283 million</li><li>(e) FY Total Cost Delta: 1,311.290 million</li></ul>		

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<b>Exhibit P-5, Cost Analysis: PB 2020 Air Force</b>		<b>Date:</b> March 2019
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> Advanced Radar Threat System V2

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	-	23.761	-	23.761
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	-	23.761	-	23.761
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	-	<b>23.761</b>	-	<b>23.761</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares (\$ in Millions)	-	-	-	-	-	-
Gross/Weapon System Unit Cost (\$ in Millions)	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2018</b>			<b>FY 2019</b>			<b>FY 2020 Base</b>			<b>FY 2020 OCO</b>			<b>FY 2020 Total</b>		
	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>
<b>Hardware - Advanced Radar Threat System V2 Cost</b>																		
Recurring Cost																		
Equipment <sup>(†)</sup>	-	-	-	-	-	-	-	-	-	22.661	1	22.661	-	-	-	22.661	1	22.661
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	-	-	-	-	-	-	22.661	-	-	-	-	-	22.661
<i>Subtotal: Hardware - Advanced Radar Threat System V2 Cost</i>	-	-	-	-	-	-	-	-	-	-	-	22.661	-	-	-	-	-	22.661
<b>Support - Advanced Radar Threat System V2 Cost</b>																		
ARTS V2 PMA	-	-	-	-	-	-	-	-	-	-	-	1.100	-	-	-	-	-	1.100
<i>Subtotal: Support - Advanced Radar Threat System V2 Cost</i>	-	-	-	-	-	-	-	-	-	-	-	1.100	-	-	-	-	-	1.100
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	-	-	-	23.761	-	-	-	-	-	23.761

**Remarks:**

Critical Design Review: Dec 18, IOT&E: Apr 20-Jun 21

<b>Secondary Distribution</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
AF	-	-	-	-	-
Total Obligation Authority	-	-	23.761	-	23.761
<b>Total:</b>	-	-	-	-	-

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<b>Exhibit P-5, Cost Analysis:</b> PB 2020 Air Force			<b>Date:</b> March 2019			
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4		<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges		<b>Item Number / Title [DODIC]:</b> Advanced Radar Threat System V2		
<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : B			<b>MDAP/MAIS Code:</b>			
<b>Secondary Distribution</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
<b>Secondary Distribution</b>	<b>Total Obligation Authority</b>	-	-	23.761	-	23.761

(t) indicates the presence of a P-5a

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<b>Exhibit P-5a, Procurement History and Planning:</b> PB 2020 Air Force	<b>Date:</b> March 2019
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<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> Advanced Radar Threat System V2
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Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty <i>(Each)</i>	Unit Cost <i>(\$ M)</i>	Specs Avail Now?	Date Revision Available	RFP Issue Date
Equipment		2020	Lockheed Martin / Gran Prairie, TX	C / FFP	AFLCMC Hill AFB	Jun 2020	Jun 2022	1	22.661	N	May 2020	

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**Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force** **Date:** March 2019

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Aggregated Modification Items Title:</b> CEAR MODS
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Item Number / Title	ID CD	MDAP/MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
CTR02 / CEAR UMTE Mod			-	-	-	-	-	0.300	-	-	9.425	-	-	1.000	-	-	-	-	-	1.000
<i>Secondary Distribution</i>																				
AF				-	-		-	0.300		-	9.425		-	1.000		-	-		-	1.000
<b>Total</b>			-	-	0.000	-	-	0.300	-	-	9.425	-	-	1.000	-	-	0.000	-	-	1.000
Item Number / Title	ID CD	MDAP/MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
CTR02 / CEAR UMTE Mod			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.725
<i>Secondary Distribution</i>																				
AF				-	-		-	-		-	-		-	-		-	-		-	-
<b>Total</b>			-	-	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-	0.000	-	-	10.725

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

**Modification Information:**

Item Number / Title	Models of Systems Affected	Modification Type
CTR02 / CEAR UMTE Mod	CombatTrainingRange	Capability Improvement



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<b>Exhibit P-5, Cost Analysis: PB 2020 Air Force</b>		<b>Date:</b> March 2019
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> DTR

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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<b>Resource Summary</b>	<b>Prior Years</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
Procurement Quantity (Units in Each)	-	-	-	-	-	-
Gross/Weapon System Cost (\$ in Millions)	-	-	0.750	0.750	-	0.750
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	-	0.750	0.750	-	0.750
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	-	<b>0.750</b>	<b>0.750</b>	-	<b>0.750</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares (\$ in Millions)	-	-	-	-	-	-
Gross/Weapon System Unit Cost (\$ in Millions)	-	-	-	-	-	-

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

<b>Cost Elements</b>	<b>Prior Years</b>			<b>FY 2018</b>			<b>FY 2019</b>			<b>FY 2020 Base</b>			<b>FY 2020 OCO</b>			<b>FY 2020 Total</b>		
	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>	<b>Unit Cost (\$ M)</b>	<b>Qty (Each)</b>	<b>Total Cost (\$ M)</b>
Support - DTR Cost																		
Digital Threat Relevancy PMA	-	-	-	-	-	-	-	-	0.750	-	-	0.750	-	-	-	-	-	0.750
<i>Subtotal: Support - DTR Cost</i>	-	-	-	-	-	-	-	-	<b>0.750</b>	-	-	<b>0.750</b>	-	-	-	-	-	<b>0.750</b>
<b>Gross/Weapon System Cost</b>	-	-	-	-	-	-	-	-	<b>0.750</b>	-	-	<b>0.750</b>	-	-	-	-	-	<b>0.750</b>

**Remarks:**

DTR Procurement funds support sustainment efforts associated with fielded legacy threat systems.

PMA includes Program Office Support and A&AS.

<b>Secondary Distribution</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020 Base</b>	<b>FY 2020 OCO</b>	<b>FY 2020 Total</b>
AF	Quantity	-	-	-	-	-
	Total Obligation Authority	-	0.750	0.750	-	0.750
<b>Total:</b>	<b>Quantity</b>	-	-	-	-	-
<b>Secondary Distribution</b>	<b>Total Obligation Authority</b>	-	<b>0.750</b>	<b>0.750</b>	-	<b>0.750</b>

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<b>Exhibit P-5, Cost Analysis: PB 2020 Air Force</b>		<b>Date:</b> March 2019
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> JTE

<b>ID Code</b> (A=Service Ready, B=Not Service Ready) : A	<b>MDAP/MAIS Code:</b>
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Resource Summary	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Procurement Quantity (Units in Each)	-	10	12	7	-	7
Gross/Weapon System Cost (\$ in Millions)	-	43.346	88.379	19.708	-	19.708
Less PY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
Net Procurement (P-1) (\$ in Millions)	-	43.346	88.379	19.708	-	19.708
Plus CY Advance Procurement (\$ in Millions)	-	-	-	-	-	-
<b>Total Obligation Authority (\$ in Millions)</b>	-	<b>43.346</b>	<b>88.379</b>	<b>19.708</b>	-	<b>19.708</b>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

Initial Spares (\$ in Millions)	-	8.188	6.435	2.322	-	2.322
Gross/Weapon System Unit Cost (\$ in Millions)	-	4.335	7.365	2.815	-	2.815

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Cost Elements	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
<b>Hardware - JTE Cost</b>																		
Recurring Cost																		
JTE Threat Emitter Unit (TEU) <sup>(†)</sup>	-	-	-	5.712	5	28.562	6.542	2	13.084	6.786	2	13.572	-	-	-	6.786	2	13.572
JTE Fixed Command & Control Unit (FC2U)	-	-	-	0.658	5	3.290	-	-	-	-	-	-	-	-	-	-	-	-
JTE Wideband Threat Emitter Unit (WTEU)	-	-	-	5.239	1	5.239	5.239	12	62.868	-	-	-	-	-	-	-	-	-
ANG JTE Spares	-	-	-	-	-	-	-	-	5.811	-	-	-	-	-	-	-	-	-
<i>Subtotal: Recurring Cost</i>	-	-	-	-	-	37.091	-	-	81.763	-	-	13.572	-	-	-	-	-	13.572
<i>Subtotal: Hardware - JTE Cost</i>	-	-	-	-	-	37.091	-	-	81.763	-	-	13.572	-	-	-	-	-	13.572
<b>Support - JTE Cost</b>																		
A&AS (PMA)	-	-	-	-	-	1.840	-	-	1.840	-	-	1.540	-	-	-	-	-	1.540
PMA	-	-	-	-	-	0.010	-	-	0.010	-	-	0.010	-	-	-	-	-	0.010
Support	-	-	-	-	-	4.405	-	-	4.766	-	-	4.586	-	-	-	-	-	4.586
<i>Subtotal: Support - JTE Cost</i>	-	-	-	-	-	6.255	-	-	6.616	-	-	6.136	-	-	-	-	-	6.136
<b>Gross/Weapon System Cost</b>	-	-	-	4.335	10	43.346	7.365	12	88.379	2.815	7	19.708	-	-	-	2.815	7	19.708

**Remarks:**

- Support includes JTE end item engineering change proposals, training, and travel

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**Exhibit P-5, Cost Analysis: PB 2020 Air Force** **Date:** March 2019

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> JTE
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**ID Code** (A=Service Ready, B=Not Service Ready) : A **MDAP/MAIS Code:**

Secondary Distribution		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
AF	Quantity	8	6	7	-	7
	Total Obligation Authority	33.802	48.379	19.708	-	19.708
AFNG	Quantity	2	6	-	-	-
	Total Obligation Authority	9.544	40.000	-	-	-
<b>Total: Secondary Distribution</b>	<b>Quantity</b>	<b>10</b>	<b>12</b>	<b>7</b>	<b>-</b>	<b>7</b>
	<b>Total Obligation Authority</b>	<b>43.346</b>	<b>88.379</b>	<b>19.708</b>	<b>-</b>	<b>19.708</b>

(†) indicates the presence of a P-5a

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**Exhibit P-5a, Procurement History and Planning:** PB 2020 Air Force **Date:** March 2019

<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4	<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges	<b>Item Number / Title [DODIC]:</b> JTE
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Cost Elements	O C O	FY	Contractor and Location	Method/Type or Funding Vehicle	Location of PCO	Award Date	Date of First Delivery	Qty <i>(Each)</i>	Unit Cost <i>(\$ M)</i>	Specs Avail Now?	Date Revision Available	RFP Issue Date
JTE Threat Emitter Unit (TEU)		2018	Northrop Grumman Amherst Systems / Buffalo, NY	C / FFP	AFLCMC Hill AFB	May 2018	Feb 2020	5	5.712	Y		
JTE Threat Emitter Unit (TEU)		2019	Northrop Grumman Amherst Systems / Buffalo, NY	C / IDIQ	AFLCMC Hill AFB	Dec 2018	Dec 2020	2	6.542	Y		
JTE Threat Emitter Unit (TEU)		2020	Northrop Grumman Amherst Systems / Buffalo, NY	C / IDIQ	AFLCMC Hill AFB	Dec 2018	Dec 2020	2	6.786	Y		

**Remarks:**  
 - TEU pricing bands are based on number of 'items' procured on a single order. FY19 TEU procured with WTEUs resulting in a lower unit cost. FY20 TEU is a single item procurement.

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<b>Exhibit P-40a, Budget Item Justification For Aggregated Modification Items: PB 2020 Air Force</b>															<b>Date:</b> March 2019				
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4					<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges										<b>Aggregated Modification Items Title:</b> JTE				

Item Number / Title	ID CD	MDAP/MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
CTR01 / Combat Training Ranges Joint Threat Emitter			-	-	5.381	-	-	3.650	-	-	1.707	-	-	1.735	-	-	-	-	-	1.735
<i>Secondary Distribution</i>																				
AF				-	-		-	3.650		-	1.707		-	1.735		-	-		-	1.735
<b>Total</b>			-	-	<b>5.381</b>	-	-	<b>3.650</b>	-	-	<b>1.707</b>	-	-	<b>1.735</b>	-	-	<b>0.000</b>	-	-	<b>1.735</b>

Item Number / Title	ID CD	MDAP/MAIS Code	FY 2021			FY 2022			FY 2023			FY 2024			To Complete			Total Cost		
			Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
CTR01 / Combat Training Ranges Joint Threat Emitter			-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.473
<i>Secondary Distribution</i>																				
AF				-	0.000		-	-		-	-		-	-		-	-		-	-
<b>Total</b>			-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>0.000</b>	-	-	<b>12.473</b>

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

**Modification Information:**

Item Number / Title	Models of Systems Affected	Modification Type
CTR01 / Combat Training Ranges Joint Threat Emitter	JointThreatEmitter	Service Life Extension

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<b>Exhibit P-40a, Budget Item Justification For Aggregated Items: PB 2020 Air Force</b>															<b>Date: March 2019</b>				
<b>Appropriation / Budget Activity / Budget Sub Activity:</b> 3080F / 03 / 4						<b>P-1 Line Item Number / Title:</b> 834190 / Combat Training Ranges									<b>Aggregated Items Title:</b> RIMCOMM AND RANGE EQUIP				

Item Number / Title [DODIC]	ID CD	MDAP/MAIS Code	Prior Years			FY 2018			FY 2019			FY 2020 Base			FY 2020 OCO			FY 2020 Total		
			Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)	Unit Cost (\$ M)	Qty (Each)	Total Cost (\$ M)
<b>RIMCOMM</b>																				
RIMCOMM Projects	A		-	-	-	-	-	37.110	-	-	64.237	-	-	83.151	-	-	-	-	-	83.151
<i>Secondary Distribution</i>																				
AF			-	-	-	-	-	37.110	-	-	64.237	-	-	83.151	-	-	-	-	-	83.151
<b>Subtotal: RIMCOMM</b>			-	-	-	-	-	<b>37.110</b>	-	-	<b>64.237</b>	-	-	<b>83.151</b>	-	-	-	-	-	<b>83.151</b>
<b>Range Equipment</b>																				
Range Equipment Projects	A		-	-	-	-	-	5.370	-	-	18.115	-	-	53.388	-	-	-	-	-	53.388
<i>Secondary Distribution</i>																				
AF			-	-	-	-	-	5.370	-	-	18.115	-	-	53.388	-	-	-	-	-	53.388
Radar Signal Emulators	A		-	-	-	-	-	-	23.625	2	47.250	20.900	1	20.900	-	-	-	20.900	1	20.900
<i>Secondary Distribution</i>																				
AF			-	-	-	-	-	-	-	2	47.250	-	1	20.900	-	-	-	-	1	20.900
Mobile Radar System	A		-	-	-	-	-	-	-	-	-	29.600	1	29.600	-	-	-	29.600	1	29.600
<i>Secondary Distribution</i>																				
AF			-	-	-	-	-	-	-	-	-	-	1	29.600	-	-	-	-	1	29.600
<b>Subtotal: Range Equipment</b>			-	-	-	-	-	<b>5.370</b>	-	-	<b>65.365</b>	-	-	<b>103.888</b>	-	-	-	-	-	<b>103.888</b>
<b>Support</b>																				
RSE PMA	A		-	-	-	-	-	-	5.335	1	5.335	-	-	0.000	-	-	-	-	-	0.000
<i>Secondary Distribution</i>																				
AF			-	-	-	-	-	-	-	1	5.335	-	-	0.000	-	-	-	-	-	0.000
<b>Subtotal: Support</b>			-	-	-	-	-	-	-	-	<b>5.335</b>	-	-	<b>0.000</b>	-	-	-	-	-	<b>0.000</b>
<b>Total</b>			-	-	-	-	-	<b>42.480</b>	-	-	<b>134.937</b>	-	-	<b>187.039</b>	-	-	-	-	-	<b>187.039</b>

Note: Subtotals or Totals in this Exhibit P-40a may not be exact or sum exactly, due to rounding.

**Remarks:**

- Range Equipment increased due to increased requirements to support interim capabilities for 5th Generation aircraft training and readiness, standardization of equipment in the range war rooms, and increased requirement to support advanced systems.
- RSEs fielding at Joint Pacific Alaska Range Complex only.
- MRS will field at Nevada Test and Training Range.