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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2025 Air Force **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	28.902	18.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	46.943
641030: <i>GPS Receiver Development</i>	-	28.902	18.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	46.943

**A. Mission Description and Budget Item Justification**

PE 0604201F, Project 641030 covers the research, development, qualification, and testing of Enhanced Anti-Jam (EAJ) Military Code (M-Code) Global Positioning System (GPS) receivers for Air Force and joint weapon systems. This includes updates to weapon mission planning software to support new M-Code and EAJ receiver development. These acquisitions will enable the Air Force to increase its operational Positioning, Navigation, and Timing (PNT) resiliency while satisfying the DoD and civil mandates. Fielding of EAJ M-Code weapons requires research, development, qualification and testing of M-Code receivers across the Air Force Program Executive Officer (AFPEO) Weapons portfolio. Funds may be used to address emerging and short notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY23 \$0.00M was expended for civilian pay expenses in this program element, and in FY24 \$0.00M is planned/forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>
Previous President's Budget	12.010	18.041	0.000	0.000	0.000
Current President's Budget	28.902	18.041	0.000	0.000	0.000
Total Adjustments	16.892	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	16.456	0.000			
• SBIR/STTR Transfer	-0.436	0.000			
• Other Adjustments	0.872	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY23 adjustments include 12.013M on FY23-29PA, Below threshold reprogrammings and Small Business Innovative Research (SBIR)

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2025 Air Force										<b>Date:</b> March 2024		
<b>Appropriation/Budget Activity</b> 3600 / 4					<b>R-1 Program Element (Number/Name)</b> PE 0604201F / PNT Resiliency, Mods, and Improvements					<b>Project (Number/Name)</b> 641030 / GPS Receiver Development		
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>FY 2026</b>	<b>FY 2027</b>	<b>FY 2028</b>	<b>FY 2029</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
641030: GPS Receiver Development	-	28.902	18.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	46.943
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

This munitions receiver development project includes development of a GPS M-code receiver with EAJ and analysis efforts. M-code receivers with EAJ provide advanced Positioning, Navigation, and Timing (PNT) capabilities required for weapons to operate in adversarial Anti-Access/Area Denial (A2/AD) environments. M-Code receivers with EAJ also provide increased accuracy, better signal acquisition, and advanced security.

M-code receivers with EAJ capability assures continued weapon system precision and lethality.

Fielding EAJ M-Code weapons requires research, development, qualification, testing, and mission planning of M-Code receivers across the weapons portfolio. This will include all systems, subsystems, software, fuzing, and support activities associated with the development and implementation of M-Code receivers.

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

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>
<b>Title:</b> M-Code EAJ	28.902	18.041	0.000
<b>Description:</b> M-Code/EAJ receivers provide an enhanced anti-jam capability. M-Code/EAJ receivers provide the capability to operate in increasing adversarial A2/AD jamming environment. M-Code/EAJ receivers also provide increased accuracy, better signal acquisition, and advanced security.			
<b>FY 2024 Plans:</b> Continuation of design, development, ground qualification, and production readiness of a High Anti-Jam Miniature M-Code Enhanced Receiver (HAMMER). Complete preliminary integration, prepare for production cut-in, and prepare for fielding in order to achieve the objectives (M-Code Receiver, M-Code Integration, Enhanced Anti-Jam, Exportability). Complete security certification of the Common Architecture for Assured Position, Navigation, and Timing (PNT)(CAAP).			
<b>FY 2025 Plans:</b> N/A			
<b>FY 2024 to FY 2025 Increase/Decrease Statement:</b> Funding decrease reflects completion of CAAP ASIC, CAAP security certification, M-Code Receiver security approval and receiver component level testing required for integration into the AUR, and purchase of M-Code test articles in FY23.			
<b>Accomplishments/Planned Programs Subtotals</b>	28.902	18.041	0.000

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<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604201F / PNT Resiliency, Mods, and Improvements	<b>Project (Number/Name)</b> 641030 / GPS Receiver Development

**C. Other Program Funding Summary (\$ in Millions)**

Line Item	FY 2023	FY 2024	FY 2025	FY 2025	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	Cost To	Total Cost
			Base	OCO	Total					Complete	
• RDTE 07 0207327F: <i>Small Diameter Bomb (SDB)</i>	17.327	13.520	7.665	-	7.665	-	-	-	-	0.000	38.512
• RDTE 07 0207325F: <i>Joint Air-to-Surface Standoff Missile (JASSM)</i>	23.507	1.076	2.812	-	2.812	-	-	-	-	0.000	27.395

**Remarks**

Other Program Funds reference what is allocated towards internal program M-Code requirements.

**D. Acquisition Strategy**

M-Code/EAJ effort uses a Family of Systems (FoS) approach where the weapons prime contractors develop receivers capable of operating in any of their Air Force weapons. The receivers are based on a common, internally-developed Interface Requirements Specification (IRS), Technology Requirement Document (TRD), and threat scenarios. This approach uses a combination of contract types based on acquisition phase (Technology Maturation & Risk Reduction (TMRR), Development, Production) and risk. The weapons system program offices share a common development Program Element (PE) to allow flexibility in funding and planning, switching to individual PEs for receiver integration, operational testing, and production. The M-Code/EAJ weapons receiver development effort leverages technology currently under development by the Military GPS User Equipment (MGUE) program and will provide the warfighter with unmatched capability to operate in future A2/AD environments.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force** **Date:** March 2024

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604201F / PNT Resiliency, Mods, and Improvements	<b>Project (Number/Name)</b> 641030 / GPS Receiver Development
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<b>Product Development (\$ in Millions)</b>				<b>FY 2023</b>		<b>FY 2024</b>		<b>FY 2025 Base</b>		<b>FY 2025 OCO</b>		<b>FY 2025 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Common Weapons M-Code Receiver Development (SDB II)	Various	Raytheon : Tucson, AZ	-	25.862	Jan 2023	14.901	Nov 2023	-		-		-	Continuing	Continuing	-
Common Weapons M-Code Receiver Development (CAAP ASIC)	MIPR	DMEA/Global Foundries : Hopewell Junction, NY	-	-		-		-		-		-	0.000	0.000	-
Common Weapons M-Code Receiver Development (JASSM C+ + Phase II)	Various	Lockheed Martin : Orlando, FL	-	-		-		-		-		-	0.000	0.000	-
Common Weapons M-Code Receiver Development (JASSM GPS Receiver)	Various	Consortium Management Gp : Washington, DC	-	3.040	Feb 2023	3.140	Feb 2024	-		-		-	Continuing	Continuing	-
Common Weapons M-Code Receiver Development (JASSM GPS - Receiver)	Various	SERCO Inc : Herndon, VA	-	-		-		-		-		-	Continuing	Continuing	-
<b>Subtotal</b>			-	28.902		18.041		-		-		-	Continuing	Continuing	N/A

	<b>Prior Years</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025 Base</b>	<b>FY 2025 OCO</b>	<b>FY 2025 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	
<b>Project Cost Totals</b>		-	28.902	18.041	-	-	-	Continuing	Continuing	N/A

**Remarks**  
Common Weapons M-Code Receiver Development (SDB II) funding increased from FY23 to FY24 due to HAMMER and CAAP ASIC development and integration into SDB II and TACTICAL Tomahawk.



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2025 Air Force		<b>Date:</b> March 2024
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i>	<b>Project (Number/Name)</b> 641030 / <i>GPS Receiver Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>M-Code/EAJ Receivers</i></b>				
M-Code/EAJ Research & Development	1	2023	3	2025
M-Code/EAJ Test and Qualification	1	2023	3	2025