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

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 0303133F / <i>High Frequency Radio Systems</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	-	2.315	40.000	8.667	0.000	8.667	0.000	0.000	0.000	0.000	0.000	50.982
675046: <i>Systems Engineering & Integration</i>	-	2.315	40.000	8.667	0.000	8.667	0.000	0.000	0.000	0.000	0.000	50.982
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

This budget line funds the Airborne High Frequency Radio Modernization (AHFRM) Middle Tier of Acquisition (MTA) program. The program is designed to replace existing legacy AN/ARC-190 High Frequency (HF) radios with a modernized HF radio, the AN/ARC-260. This replacement radio provides digital, software defined HF capability for 1,300 aircraft (most of which require multiple AN/ARC-260s) across 15 distinct Global Strike, Military Airlift (MAF) and refueling platforms within the US Air Force, US Navy, and US Coast Guard.

The AN/ARC-190 is end-of-life and is currently the only HF radio capability within these 15 aircraft platforms. Starting FY24-Q4, it is anticipated the AN/ARC-190 radio will fall below supply chain thresholds. This Federal Aviation Administration (FAA) Minimum Equipment Listing (MEL) requires a secure Long-Range Communication System (LRCS) on all aircraft performing transoceanic flights, and therefore, will ground any aircraft without this capability. Without the completion of the AHFRM program, any aircraft platform without a functioning LRC radio will be unable to perform any transoceanic flight until a replacement radio is procured outside of current supply chain reserves. The replacement AN/ARC-260 radio is the only Air Force airborne HF digital radio in development to address this anticipated capability gap.

Impacted aircraft include AC-130J, B-1, B-52, C-5, C-17, C-130J, E-4B, E-6B, EC-130J, HC-130J, KC-130H, KC-135, KC-46, and MC-130J.

The new AN/ARC-260 radio provides critical long-range HF communications when satellite communications are unavailable due to nature and/or man-made disruptions. It will incorporate new technologies such as 3G/4G Automatic Link Establishment and Low Probability of Intercept/Detection/Geolocation features, as well as accommodate the development of new technologies through software upgrades and open architecture. Finally, the AN/ARC-260 radio will be critical in providing a survivable/secure communications path for Force Direction messages.

For FY25, a follow-on antenna coupler development effort is required to replace the legacy AN/ARC-190 analog coupler used as part of the new AN/ARC-260 radio. During contactor testing, the legacy AN/ARC-190 analog antenna coupler return rate was unable to match AN/ARC-260 processing power and limited output to 10 KHz versus the expected 48 KHz of wideband throughput. The legacy analog coupler can be used with the new AN/ARC-260 radio but limits the overall capabilities. Additionally, the AN/ARC-190 analog coupler is now out of production and presents significant supportability challenges starting in FY27.

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,

UNCLASSIFIED

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and 0606398F. In FY23 \$0.000M was expended for civilian pay expenses in this program element, and in FY24 \$0.000M is forecasted for civilian pay expenses in this program element.

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.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	0.000	40.000	0.000	0.000	0.000
Current President's Budget	2.315	40.000	8.667	0.000	8.667
Total Adjustments	2.315	0.000	8.667	0.000	8.667
• 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	2.315	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	8.667	0.000	8.667

Change Summary Explanation

The FY 2023 funding request was increased by 2.315 million to account for an Above Threshold Reprogramming (ATR) to support additional developmental testing requirements

The FY 2025 funding request was increased by 8.667 million to account for the development of a digital radio coupler for the AN/ARC-260 airborne HF radio.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
Title: High Frequency Radio System	2.315	40.000	8.667
Description: Development of High Frequency Radio System			
FY 2024 Plans: Activities supported with FY24 funding include, but are not limited to the following: - Complete AN/ARC-260 airborne HF radio prototype - Complete Developmental Testing - Complete production readiness activities - Ordering production representative test assets for aircraft integration			

UNCLASSIFIED

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025
<ul style="list-style-type: none"> - Complete test readiness and perform Operational Testing - Publish test results and final reports to appropriate stakeholders in support of decision reviews and certification of asset readiness - Gain production approval <p><i>FY 2025 Plans:</i> Will begin the development of digital coupler to meet Air Force nuclear requirements</p> <p><i>FY 2024 to FY 2025 Increase/Decrease Statement:</i> FY25 funding decreases due to the completion of the AN/ARC-260 airborne HF radio development and focused efforts on development of digital coupler.</p>			
Accomplishments/Planned Programs Subtotals	2.315	40.000	8.667

D. Other Program Funding Summary (\$ in Millions)
N/A

Remarks

E. Acquisition Strategy
The Service Acquisition Executive (SAE) designated the AHFRM program a MTA Rapid Prototyping effort on 4 Sep 2018. To date, the program completed a competitive rapid prototyping effort and awarded a 5-year/176M pre/post-production contract to BAE Systems in Dec 2021. AHFRM is scheduled to transition from an MTA to an MCA program in 2024.

The AHFRM program received FY19 and FY20 funding to begin its rapid prototyping efforts. In FY22, the Survivable Airborne Operations Center (SAOC) program (PE 0604288F) provided \$38.6M FY22 funding to continue AHFRM program development. The SAOC FY22 PB supports use of RDT&E funds for external subsystems that heavily impact their technical baseline. The AHFRM program directly supports SAOC derived requirements and meets bona fide need requisites for FY22 work.

The Milestone Decision Authority for the AHFRM program is the Air Force Program Executive Officer - Agile Combat Support. Program management for the AHFRM program is located at Robins AFB, GA. The Air Force Life Cycle Management Center - Combat Avionics Division (AFLCMC/WNX) provides contracting, legal, comptroller, programmatic, engineering, test, and logistics support.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0303133F / High Frequency Radio Systems				675046 / Systems Engineering & Integrations								
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Product Readiness	C/FFP	Not specified. : TBD	-	-		5.000	Jan 2024	-		-		-	0.000	5.000	-	
Coupler Development	C/FFP	Not specified. : TBD	-	-		-		7.537	Jan 2025	-		7.537	0.000	7.537	-	
Subtotal			-	-		5.000		7.537		-		7.537	0.000	12.537	N/A	
Support (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Sustainment Planning	C/FFP	Not specified. : TBD	-	0.315	Dec 2023	1.300	Jan 2024	-		-		-	0.000	1.615	-	
SRD Changes	C/FFP	Not specified. : TBD	-	-		2.894	Jan 2024	-		-		-	Continuing	Continuing	-	
Subtotal			-	0.315		4.194		-		-		-	Continuing	Continuing	N/A	
Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Operational Test	PO	Not specified. : TBD	-	2.000	Jan 2024	6.615	Jan 2024	-		-		-	0.000	8.615	-	
Aircraft Integration Test Assets	C/CPAF	Not specified. : TBD	-	-		15.999	Aug 2024	-		-		-	0.000	15.999	-	
Subtotal			-	2.000		22.614		-		-		-	0.000	24.614	N/A	
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Support Costs	C/FFP	Not specified. : TBD	-	-		4.792	Jan 2024	1.000	Jan 2025	-		1.000	0.000	5.792	-	
Program Taxes	C/FFP	Not specified. : TBD	-	-		3.400	Mar 2024	0.130	Mar 2025	-		0.130	Continuing	Continuing	-	
Subtotal			-	-		8.192		1.130		-		1.130	Continuing	Continuing	N/A	

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

	FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
	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

<i>High Frequency Radio System</i>																												
Product Development																												
Support																												
Test and Evaluation																												
Management Services																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303133F / <i>High Frequency Radio Systems</i>	Project (Number/Name) 675046 / <i>Systems Engineering & Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>High Frequency Radio System</i>				
Product Development	1	2024	4	2025
Support	1	2023	4	2024
Test and Evaluation	1	2023	4	2024
Management Services	1	2023	4	2024