

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0303133F I High Frequency Radio Systems							
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	-	0.000	51.612	15.881	0.000	15.881	0.000	0.000	0.000	0.000	0.000	67.493
675046: Systems Engineering & Integration	-	0.000	51.612	15.881	0.000	15.881	0.000	0.000	0.000	0.000	0.000	67.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Mission Description and Budget Item Justification: The HF Modernization program is designed to replace existing legacy High Frequency (HF) radios with a modernized HF radio on all Air Force (AF) aircraft that currently are equipped with HF radios (e.g., AN/ARC-190). The current HF radios installed on AF aircraft have reached obsolescence and there is a compelling need to modernize the HF capabilities. The replacement radio will have similar form and fit, but increased capability. The new radio needs to incorporate new technologies such as 3G/4G Automatic Link Establishment (ALE), wide band features that allow the radio to operate from 3 KHz up to 48 KHz channel spacing, and Low Probability of Intercept/Low Probability of Detection (LPI/LPD) features. The new HF radio should be software defined (SDR) to accommodate growth for newer technologies and embedded cryptographic options.

The current AN/ARC-190 radios, that serve a majority of HF airborne needs, will approach end of life ~2025 and do not have current capabilities to be sustainable for future years. Current and future AF aircraft with validated requirements for HF radios will experience a shortage of HF radios starting in FY20. With the increased shortage of spares, as the current HF radios continue to fail, Air Traffic Control (ATC), Air Operation Centers (AOC), and other controlling agencies will lose the ability to communicate with aircraft. HF Modernization provides alternate means of communication when satellite communications are not available due to nature and man-made disruptions. It is essential that these airborne radios keep pace to guarantee interoperability or theater C2 will be degraded.

Program management and administration efforts consist of, but are not limited to, contract services and government costs. This program element may include necessary civilian pay expenses required to manage, execute, and deliver HF Modernization effort. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements, 0605826F, 0605827F, 0605829F, 0605830F, 0605812F, 0605898F, 0605833F.

Funding for this exhibit contained in PE 0303133F.

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 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force				Date: February 2019	
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>I High Frequency Radio Systems</i>			
B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	0.000	51.612	15.881	0.000	15.881
Current President's Budget	0.000	51.612	15.881	0.000	15.881
Total Adjustments	0.000	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	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019
Title: High Frequency Radio System				0.000	51.612
Description: Development of High Frequency Radio System					
FY 2019 Plans: Development of High Frequency Radio System					
FY 2020 Plans: Development of High Frequency Radio System					
FY 2019 to FY 2020 Increase/Decrease Statement: Funding decreased from FY19 to FY20 as result of DOD CIO funding availability.					
Accomplishments/Planned Programs Subtotals				0.000	51.612
D. Other Program Funding Summary (\$ in Millions) N/A					
Remarks Major Thrust - Funding decrease from FY19 to FY20 as result of DOD CIO funding availability.					
E. Acquisition Strategy Efforts awarded on an annual basis, exercising existing contract options, to support Development of High Frequency Radio System.					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development		R-1 Program Element (Number/Name) PE 0303133F / High Frequency Radio Systems
F. 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.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
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>					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
High Frequency Radio System	TBD	Not specified. : TBD	-	-		51.612		15.881		-		15.881	Continuing	Continuing	-
Subtotal			-	-		51.612		15.881		-		15.881	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		51.612		15.881		-		15.881	Continuing	Continuing	N/A
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force			Date: February 2019		
Appropriation/Budget Activity 3600 / 7			R-1 Program Element (Number/Name) PE 0303133F / High Frequency Radio Systems		
			Project (Number/Name) 675046 / Systems Engineering & Integration		

	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
High Frequency Radio System																												
Development																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303133F / High Frequency Radio Systems	Project (Number/Name) 675046 / Systems Engineering & Integration

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
High Frequency Radio System				
Development	2	2019	4	2020