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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>
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COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	0.000	9.901	0.000	15.787	0.000	15.787	0.000	7.941	0.000	0.000	0.000	33.629
653891: <i>JDAM M-Code Integration</i>	0.000	9.901	0.000	15.787	0.000	15.787	0.000	7.941	0.000	0.000	0.000	33.629
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Military Code (M-Code) receivers with Enhanced Anti-Jam (EAJ) will be developed and integrated in order to provide advanced positioning, navigation, and timing (PNT) capabilities to allow operations in anti-access/area denial (A2/AD) environments. M-Code and EAJ also provide increased accuracy, better signal acquisition, and advanced security.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver M-Code/EAJ capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget	9.901	0.000	15.906	0.000	15.906
Current President's Budget	9.901	0.000	15.787	0.000	15.787
Total Adjustments	0.000	0.000	-0.119	0.000	-0.119
• 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	-0.119	0.000	-0.119

Change Summary Explanation

No Significant Changes

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: M-Code/Enhanced Anti-Jam (EAJ) Description: Develop and integrate M-Code receivers with EAJ to provide advanced positioning, navigation, and timing (PNT) capabilities, providing the capability to operate in adversarial anti-access/area denial (A2/AD) environments. M-Code receivers with EAJ also provides increased accuracy, better signal acquisition, and advanced security. FY 2018 Plans: N/A FY 2019 Base Plans: Develop and integrate M-Code/EAJ across the AFPEO weapons portfolio. FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding increase due to reduced funds in the specific receiver development PE.	9.901	0.000	15.787	0.000	15.787
Accomplishments/Planned Programs Subtotals	9.901	0.000	15.787	0.000	15.787

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019 Base</u>	<u>FY 2019 OCO</u>	<u>FY 2019 Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 04 PE 0604201F: <i>Integrated Avionics Planning and Development</i>	-	60.444	15.006	-	15.006	-	-	-	-	0.000	75.450
Remarks											

E. Acquisition Strategy
 M-Code/EAJ effort uses a Family of Systems approach where the three prime weapons contractors develop receivers capable of operating in any of their AF weapons. The receivers are based on a common, internally-developed IRS, TRD, and threat scenario. This approach uses a combination of contract types based on acquisition phase (TMRR, Development, Production) and risk. The Weapons SPOs share a common development PE to allow flexibility in funding and planning, switching to individual PEs for receiver integration, OT, and production. The M-Code/EAJ Weapons Receiver Development effort leverages technology currently under development by the GPS-D MGUE program and will provide the warfighter with unmatched capability to operate in future A2/AD environments.

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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.

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force **Date:** February 2018

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>	Project (Number/Name) 653891 / <i>JDAM M-Code Integration</i>
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FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
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

M-Code/EAJ Receivers	
M-Code/EAJ Receiver chip development	[REDACTED]
M-Code/EAJ Receiver Integration	[REDACTED]
M-Code/EAJ Test and Evaluation	[REDACTED]

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force **Date:** February 2018

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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>M-Code/EAJ Receivers</i>				
M-Code/EAJ Receiver chip development	4	2017	4	2020
M-Code/EAJ Receiver Integration	1	2020	3	2022
M-Code/EAJ Test and Evaluation	2	2019	4	2020