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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 0207325F I Joint Air-to-Surface Standoff Missile (JASSM)							
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	236.641	29.436	42.472	78.498	0.000	78.498	36.210	19.868	20.230	20.594	130.700	614.649
675356: JASSM Extended Range (JASSM-ER)	236.641	29.436	42.472	78.498	0.000	78.498	36.210	19.868	20.230	20.594	130.700	614.649
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		
Program MDAP/MAIS Code: 555												
A. Mission Description and Budget Item Justification												
<p>The Joint Air-to-Surface Standoff Missile Extended Range (JASSM-ER), AGM-158B, continues the evolution of the JASSM Family of missiles. JASSM-ER provides a long range (over twice the range of JASSM Baseline/AGM-158A), conventional air-to-surface, autonomous, precision-guided, low observable, standoff cruise missile compatible with fighter and bomber aircraft. The requirement is in the JASSM-ER Capability Production Document (CPD), dated 16 Apr 2010. Aircraft integration of JASSM-ER is complete on the B-1, F-15, and B-52. Objective aircraft are B-52, F-16, B-2, and F-15. JASSM-ER provides the capability to attack a variety of high value fixed or relocatable targets with precision, through preplanned missions or target-of-opportunity, deeper into enemy territory than JASSM Baseline (BL), minimizing the threat to launch aircraft. The Air Force developed JASSM-ER based on a contractor-developed, government-approved System Performance Specification (SPS). The program continues development/integration efforts on the Intelligent Telemetry Instrumentation Kit (ITIK), the Electronic Safe and Arm Fuze (ESAF), the Military Code (M-Code) receiver, and Flight Termination System Telemetry Integration Kit (FTS-ITIK) batteries. FY16/17 studies led to modifying JASSM-ER to include survivability improvements that enhance lethality and distance via Wing Replacement/Chine Development/Integration and Warfighting Capability Enhancement (Software) to improve performance against emerging threats. The 2018 National Defense Strategy (NDS) increased the JASSM Inventory Objective by 48% which resulted in the monitoring of 13 subsystems for obsolescence. The program is also evaluating Diminishing Manufacturing Sources Material Shortages (DMSMS). Potential future efforts include Anti-Radiation Homing System (ARHS), improved Data Link capability for relocatable target attack, alternate payloads, improved Guidance Navigation Control (GNC), alternative FTS-ITIK power source evaluations, advanced JASSM survivability, and a smaller warhead.</p>												
<p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver JASSM weapon system 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, 0605833F, and 0605898F.</p>												
<p>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.</p>												
<p>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.</p>												

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B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	29.932	60.062	79.198	0.000	79.198
Current President's Budget	29.436	42.472	78.498	0.000	78.498
Total Adjustments	-0.496	-17.590	-0.700	0.000	-0.700
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-17.590			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.589	0.000			
• SBIR/STTR Transfer	-1.085	0.000			
• Other Adjustments	0.000	0.000	-0.700	0.000	-0.700
Change Summary Explanation FY2019: AF requested transfer of \$17.590M to Common M-Code PEC 0604201F (Line 38)					
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Warfighting Capability Enhancement	4.427	10.800	12.270	-	12.270
Description: Design, development and preparation for a primary contract for software and mission planning changes to enable the missile to maintain operational effectiveness in classified scenarios.					
FY 2019 Plans: Continue design and development of classified software and mission planning changes to enable the missile to maintain operational effectiveness in classified scenarios.					
FY 2020 Base Plans: Begin flight tests and update classified software accordingly based on flight test results. Begin modification of additional classified software to enable the missile to maintain operational effectiveness in classified scenarios.					
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase due to flight test start, Missile Operational Flight Program (MOFP) updates and continued C++ support.					
Title: Wing Replacement/Chine Development, survivability enhancement, and Integration	13.284	22.811	49.758	-	49.758
Description: Provides increased standoff range, survivability, and improved vehicle stability/control.					

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
FY 2019 Plans: Continue design and development efforts for wing sub-systems.						
FY 2020 Base Plans: Continue design and development efforts for wing sub-systems to include B-1 Integration. Increase program office footprint and seating via relocatable, temporary equipment to support workforce and management of programs and security infrastructure upgrades to ensure program schedules are maintained.						
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase due to ramp up of wing EMD effort to include B-1 flight test and procurement of development and qualification hardware.						
Title: Electronic Safe and Arm Fuze (ESAF) Description: ESAF will resolve FMU-156 obsolescence and reliability issues, improve yield, and potentially lower costs.		4.272	6.365	10.882	-	10.882
FY 2019 Plans: Continue ESAF environmental, safety, and qualification testing.						
FY 2020 Base Plans: Continue ESAF environmental, safety, and qualification testing to include Sled Flight Test.						
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase due to ITIK purchase/install and Sled/Flight test start.						
Title: M-Code and Related Development Efforts Description: Development and integration of a GPS receiver capable of receiving M-Code		6.361	0.000	0.000	-	0.000
FY 2019 Plans: Realignment of funds to Common M-Code PEC 0604201F.						
The M-Code software slip under the MGUE program has slipped the entire program right by eleven months. Funding may be required for interim solution to bridge gap of receiver. Pre-EMD and EMD additional scope necessary.						
FY 2020 Base Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)						FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
Realignment of funds to Common M-Code PEC 0604201F.											
FY 2019 to FY 2020 Increase/Decrease Statement: N/A											
Title: Other Development/Safety/Survivability						1.092	2.496	5.588	-	5.588	
Description: Develop and integrate advanced precision, navigation, and timing (PNT) capabilities (e.g. GPS, non-GPS, optical, passive, active, etc.), evaluations (study analysis), survivability enhancements to include safety certification, flight testing, DMSMS, improved Data Link, ARHS, improved GNC, alternate payloads, and obsolescence issues.											
FY 2019 Plans: Continue development/evaluations activities addressing JASSM's obsolescence plan directed activities: Improved GNC, anti-jam/anti-spoofing system, and survivability enhancements, evaluate smaller warhead. Support ground and flight test activity required to verify changed hardware before cutting into production. Continue evaluation for long-term FTS-TIK alternate power source.											
FY 2020 Base Plans: Continue evaluation activity addressing JASSM's obsolescence plan directed activities to include Non-GPS Nav Joint Capability Technology Demonstration (JCTD).											
FY 2019 to FY 2020 Increase/Decrease Statement: Funding increase due to Non-GPS Nav JCTD.											
Accomplishments/Planned Programs Subtotals						29.436	42.472	78.498	-	78.498	
D. Other Program Funding Summary (\$ in Millions)											
Line Item	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
• MPAF 02 0207325F: JASSM	433.117	602.828	482.525	20.900	503.425	417.450	438.335	450.234	440.337	2,967.785	6,253.511
Remarks											

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E. Acquisition Strategy The JASSM Acquisition Strategy was amended and approved on September 8, 2017. This amendment enables the JASSM program to introduce upgrades which ensure its viability as the threat environment evolves. AGM-158D is a modification to the existing JASSM-ER that enhances lethality and range while replacing obsolete subsystems that incorporates multiple initiatives into a single, system level update. All current development contracts use a Cost Plus type contract.		
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-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 0207325F / Joint Air-to-Surface Standoff Missile (JASSM)				Project (Number/Name) 675356 / JASSM Extended Range (JASSM-ER)					
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
Warfighting Capability Enhancement	SS/CPAF	Lockheed Martin : Orlando, FL	0.000	4.427	May 2018	10.800	Nov 2018	12.270	Nov 2019	-		12.270	31.470	58.967	67.724
Wing Replacement/Chine Development, survivability enhancements, and Integration	SS/CPFF	Lockheed Martin : Orlando, FL	0.000	7.431	Jan 2018	22.811	Jan 2019	49.758	Nov 2019	-		49.758	62.200	142.200	136.000
ESAF	SS/CPFF	Lockheed Martin : Orlando, FL	12.332	3.835	Nov 2017	6.365	Nov 2018	10.882	Nov 2019	-		10.882	0.000	33.414	18.872
M-code and Related Development Efforts	SS/CPFF	Lockheed Martin : Orlando, FL	1.105	6.361	Nov 2017	0.000		-		-		-	36.974	44.440	74.610
JASSM-ER Phase ,I/ II development Test Missile Procurement (for DT/IT), parts upgrade, software updates, product improvements, survivability enhancements, LTIK, ITIK, and obsolescence.	Various	Lockheed Martin : Orlando, FL	157.248	1.018	Mar 2018	2.396	Mar 2018	5.488	Nov 2019	-		5.488	95.358	261.508	192.109
Subtotal			170.685	23.072		42.372		78.398		-		78.398	226.002	540.529	N/A
Remarks															
-Intelligent Telemetry Instrumentation Kit (ITIK)															
-Legacy Telemetry Instrumentation Kits (L-TIK)															
-Electronic Safe and Arm Fuze (ESAF)															
Test and Evaluation (\$ 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
Government Test Support.Includes flight test equipment, targets, 96th Test Wing and Range support, AEDC	Various	96 TW : Eglin AFB, FL	26.703	6.290	Feb 2018	-		-		-		-	1.100	34.093	31.644

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Test and Evaluation (\$ 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
test support, and other ground/flight test support as necessary.															
6 IT/6 OT assets	SS/CPAF	Lockheed Martin : Orlando, FL	12.733	-		-		-		-		-	0.000	12.733	12.733
12 Operational Test (OT) assets	SS/FFP	Lockheed Martin : Orlando, FL	24.642	-		-		-		-		-	0.000	24.642	24.643
Subtotal			64.078	6.290		-		-		-		-	1.100	71.468	N/A

Remarks
Test and Evaluation in FY19 and out will be incorporated into each separate development effort rather than broken out into its own category

Management Services (\$ 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
Program Management Administration (PMA). Provides program office oversight of development and upgrade activities.	Various	PMA : Eglin AFB, FL	1.878	0.074	Mar 2018	0.100	Mar 2019	0.100	Mar 2020	-		0.100	0.500	2.652	3.771
Subtotal			1.878	0.074		0.100		0.100		-		0.100	0.500	2.652	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			236.641	29.436		42.472		78.498		-		78.498	227.602	614.649	N/A

Remarks
Test and Evaluation is now incorporated within the respective RDT&E categories rather than being broken out as a separate cost.

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force			Date: February 2019		
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	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
<i>RDT&E Schedule Details</i>																												
Warfighting Capability Enhancement																												
Wing Replacement/Chine Development, survivability enhancements, and Integration																												
ITIK Battery Development and Qualification (Phase 1,2, and 3)																												
ITIK Integration with JASSM and Test Equipment Development																												
ITIK Flight Testing (LRASM)																												
ESAF Prototyping																												
ESAF Critical Design Review (CDR)																												
ESAF Sled Testing																												
ESAF Qualification Testing																												
ESAF Flight Testing																												
ESAF Production Readiness Review (PRR)																												
M-Code Pre-EMD																												
M-Code Engineering and Manufacturing Development (EMD)																												
Diminishing Manufacture Sources and Obsolescence Evaluation/Development																												

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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 0207325F / Joint Air-to-Surface Standoff Missile (JASSM)	Project (Number/Name) 675356 / JASSM Extended Range (JASSM-ER)	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>RDT&E Schedule Details</i>				
Warfighting Capability Enhancement	3	2018	4	2022
Wing Replacement/Chine Development, survivability enhancements, and Integration	1	2018	3	2022
ITIK Battery Development and Qualification (Phase 1,2, and 3)	1	2018	1	2020
ITIK Integration with JASSM and Test Equipment Development	1	2018	3	2018
ITIK Flight Testing (LRASM)	1	2018	4	2018
ESAF Prototyping	1	2018	3	2019
ESAF Critical Design Review (CDR)	2	2019	2	2019
ESAF Sled Testing	1	2019	3	2021
ESAF Qualification Testing	3	2019	2	2020
ESAF Flight Testing	1	2021	4	2021
ESAF Production Readiness Review (PRR)	3	2020	3	2020
M-Code Pre-EMD	1	2018	4	2019
M-Code Engineering and Manufacturing Development (EMD)	4	2018	4	2019
Diminishing Manufacture Sources and Obsolescence Evaluation/Development	1	2018	4	2022