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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

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 0207325F <i>Joint Air-to-Surface Standoff Missile (JASSM)</i>
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COST (\$ in Millions)	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	453.110	114.018	117.198	132.937	0.000	132.937	57.141	40.945	17.908	21.818	407.772	1,362.847
675356: <i>JASSM Extended Range (JASSM-ER)</i>	453.110	114.018	117.198	132.937	0.000	132.937	57.141	40.945	17.908	21.818	407.772	1,362.847
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 555

A. Mission Description and Budget Item Justification

The Joint Air-to-Surface Standoff Missile (JASSM) family of missiles includes: JASSM Baseline (JASSM-BL/AGM-158A) and JASSM Extended Range (JASSM-ER/AGM-158B, AGM-158B-2, AGM-158B-3, and AGM-158D). JASSM-ER provides a long range, conventional air-to-surface, autonomous, precision-guided, low observable, standoff cruise missile compatible with fighter and bomber aircraft. 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-BL, all while minimizing the threat to launch aircraft. Aircraft integration of JASSM-ER/AGM-158B is complete on the B-1, F-15E, F-16, B-2, and B-52. Threshold aircraft is the B-1 and Objective aircraft are F-15E, F-16, B-52, B-2, and F-35.

The AGM-158A and AGM-158B are fielded. The AGM-158B-2, AGM-158B-3, and AGM-158D are in development and will gradually insert into the production line as the new missile builds are approved and ready. DD-250'd missiles will not be returned for modification to the newest variant.

Threats to JASSM survivability are being rapidly developed and fielded by peer-to-peer adversaries. JASSM continued development is critical to maintaining its first day of the war capability and to fulfill Combatant Commanders Operational Plan objectives. Continued development enhances capability and provides operational flexibility against current and projected threats. This is accomplished by evaluating high payoff technology development, performing risk reduction activities, and investigating new variants and/or alternate missions that may use JASSM attributes. To maximize effectiveness of existing inventory and address findings from the field, the Air Force also develops, tests, and fields improvements via software upgrades into fielded missiles and/or hardware upgrades inserted into the production line.

The AGM-158B-2 is an upgrade to the existing JASSM-ER/AGM-158B, incorporating multiple development initiatives to respond to rapidly changing threats. The AGM-158B-2 replaces obsolete components and provides a new electronic fuze, a new Global Positioning System (GPS) receiver, an upgraded Missile Control Unit (MCU), and enhanced software. The AGM-158B-2 will begin a gradual production cut-in starting in Lot 19/FY21 funding year. The AGM-158B-3 provides M-code capability and will begin a gradual production cut-in starting in Lot 21/FY23 funding year. The AGM-158D provides Weapon Data Link (WDL) capability to re-target the missile, post-launch, against relocatable or higher priority targets during mission execution. The AGM-158D will begin a gradual production cut-in starting in Lot 22/FY24 funding year.

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,

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0606398F. In FY22 0.25M was expended for civilian pay expenses in this program element, and in FY23 0.91M is forecasted for civilian pay expenses in this program element.

Implements tenets of Open, Agile, and Digital acquisition for any new subsystem hardware or software development. Integrates the system in weapon portfolio tradespace studies by conducting trade studies, system engineering, test activities, and system modeling and simulation. Builds and refines a mission modeling framework by incorporating higher-fidelity weapon system designs and updates to the threat landscape to conduct ongoing assessment of weapon system performance against the authoritative threat. Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, data management, digital environments, networks, facilities, and security infrastructure upgrades supporting development of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

Funding may be used to address Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues.

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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	117.325	117.198	99.784	0.000	99.784
Current President's Budget	114.018	117.198	132.937	0.000	132.937
Total Adjustments	-3.307	0.000	33.153	0.000	33.153
• 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	-3.307	0.000			
• Other Adjustments	0.000	0.000	33.153	0.000	33.153

Change Summary Explanation

FY22: The FY22 funding was reduced by 3.307M for Small Business Innovation Research (SBIR).

FY24: The Non Advocate Cost Analysis (NACA) identified additional FY 2024 requirements to include flight tests to support C++, AGM-158B-2, and Weapon Data Link (WDL), which leads to an FY 2024 total adjustment totaling 20.880M. Addition of 12M for M2 software and 0.273M inflation adjustment.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Title: Warfighting Capability Enhancement	26.017	24.786	32.203

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<p>Description: Design and development of software and mission planning changes to ensure the missile maintains operational effectiveness in classified scenarios.</p> <p>FY 2023 Plans: Continue flight tests and update classified software accordingly based on flight test results. Continue modification of classified software to enable the missile to maintain operational effectiveness in classified scenarios. FY2023 includes two planned flight tests for verification of system updates. Complete automation of Terminal Area Model (TAM) process. Continue Weapon Data Link (WDL) software development.</p> <p>FY 2024 Plans: Continue flight tests and update classified software accordingly based on flight test results. Continue modification of classified software to enable the missile to maintain operational effectiveness in classified scenarios. FY2024 includes completion of 54.0.02 software build and associated flight tests for verification of system updates.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased to incorporate M2 sw scope, addition of classified Verification & Validation scope not previously required, and increased risk on sw updates.</p>				
<p>Title: Advanced Survivability, Integration, and Test</p> <p>Description: This effort includes development, integration and testing and will continue to enhance missile survivability through subsystem updates including cyber security implementation. It also ensures compatibility of the former wing design with new missile subsystems. The AGM-158B-2 will include a new Electronic Safe and Arm Fuze (ESAF), JASSM Anti-Jam Global Positioning System (GPS) Receiver with Selective Availability Anti-Spoofing Module (JAGR-S V5), an upgraded Missile Control Unit (MCU), Gigabit Ethernet Connector, and enhanced C++ software. This missile variant leverages LRASM coatings, Power Converter Assembly (PCA), Aft Cover and Power and Engine Control Unit (PECU) for improved production commonality.</p> <p>FY 2023 Plans: Continue developmental testing for AGM-158B-2 which will include ground mounts, captive carry, and full release missions. Additional efforts to support this development will include agile software validation using Software-in-the-Loop (SIL), Hardware-in-the-Loop (HIL), and Processor-in-the-Loop (PIL) labs, program protection and cyber security efforts in support of Interim Authority to Operate (IATT) and Authority to Operate (ATO) requirements.</p> <p>FY 2024 Plans:</p>		55.935	32.115	15.444

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
Continue and finalize developmental testing for AGM-158B-2 which will include full release missions. Additional efforts to support this development will include program protection and cyber security efforts in support of IATT and ATO requirements. FY 2023 to FY 2024 Increase/Decrease Statement: Funding decreased because many design and test activities conclude.				
Title: Electronic Safe and Arm Fuze (ESAF) Description: ESAF will resolve Fuze Munitions Unit-156A/B (FMU-156A/B) obsolescence and reliability issues, improve yield, and potentially lower costs. FY 2023 Plans: Effort will be complete resulting in a fully qualified FMU-156B/B ESAF. FY 2024 Plans: Effort will be complete resulting in a fully qualified FMU-156B/B ESAF. FY 2023 to FY 2024 Increase/Decrease Statement: N/A		1.000	0.000	0.000
Title: Weapon Data Link (WDL) Description: This effort includes development of the Weapon Data Link (WDL), as well as integration and testing efforts. The WDL allows warfighters to retarget the weapons via line-of-sight and beyond-line-of-sight, allowing the missile to attack relocatable and/or time sensitive targets post aircraft release. The WDL program is designed to use an open system architecture standard with outside communication nodes but integrated into a proprietary missile system. FY 2023 Plans: Continue WDL radio, power supply, and antenna development and prototyping events leading to Systems Requirement Review (SRR). Continue fuel tank redesign effort to ensure WDL volume is available to support no degradation to range capabilities. FY 2024 Plans: Continue development efforts leading to Production Readiness Review. Begin sub-system and system-level hardware demonstrations, as well as testing and qualification activities required for flight testing targeted in FY25. FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to changes based on services interoperability requirement. This change drives need for fuel tank redesign, WDL radio procurement and additional antennas.		25.681	56.782	81.496
Title: Other Development/Safety/Survivability		5.385	3.515	3.794

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>Description: This system improvement program (SIP) focuses on maintaining and upgrading capability and includes development, integration, and testing and will continue to enhance missile survivability through subsystem updates, including cyber security implementation. The SIP will explore and exploit new form, fit, function hardware to maximize missile performance and address newly matured capabilities and emerging threats. These updates will be incorporated via engineering change proposals (ECPs). Potential efforts could include development and integration of advanced Precision, Navigation, and Timing (PNT) capabilities (e.g. Global Positioning System (GPS), non-GPS, optical, passive, active, etc.), evaluations (study analysis), survivability enhancements, safety certifications, flight testing, and Diminishing Manufacturing Sources and Material Shortage (DMSMS). A GPS Military (M) Code receiver is being developed to enable the missile to operate in a GPS-denied environment.</p> <p>FY 2023 Plans: Continue evaluation activity addressing JASSM's obsolescence plan directed activities to include safety and survivability studies. Continue GNC and autopilot software allocations and updates.</p> <p>FY 2024 Plans: Continue evaluation activity addressing JASSM's obsolescence plan directed activities to include safety and survivability studies. Continue GNC and autopilot software allocations and updates.</p> <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to continued Diminishing Manufacturing Sources and Material Shortage issues.</p>			
Accomplishments/Planned Programs Subtotals	114.018	117.198	132.937

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	Total Cost
			Base	OCO	Total					Complete	
• MPAF 02 0207325F: JASSM	710.550	784.971	1,685.668	-	1,685.668	823.060	819.713	827.541	849.067	0.000	6,500.570

Remarks

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. All current development contracts use a Cost Plus type contract.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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)
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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Warfighting Capability Enhancement	SS/CPAF	Lockheed Martin : Orlando, FL	57.809	26.017	Nov 2021	24.786	Nov 2022	27.203	Nov 2023	-		27.203	41.466	177.281	153.217
Advanced Survivability, Integration, and Test	SS/CPFF	Lockheed Martin : Orlando, FL	76.097	55.935	Nov 2021	32.115	Nov 2022	15.444	Nov 2023	-		15.444	15.444	195.035	160.000
ESAF	SS/CPFF	Lockheed Martin : Orlando, FL	32.321	1.000	Mar 2022	-		-		-		-	0.000	33.321	22.331
M-code and Related Development Efforts	SS/CPFF	Lockheed Martin : Orlando, FL	13.851	-		-		-		-		-	0.000	13.851	11.531
Weapon Data Link	SS/CPFF	Various : Orlando, FL	14.601	25.681	Dec 2021	56.782	Dec 2022	86.496	Dec 2023	-		86.496	80.218	263.778	170.000
JASSM-ER development test missile procurement (for DT/OT), parts upgrade, software updates, product improvements, survivability enhancements, LTIK, ITIK, and obsolescence.	Various	Lockheed Martin : Orlando, FL	172.536	5.035	Jan 2022	1.595	Mar 2023	0.794	Mar 2024	-		0.794	18.597	198.557	185.000
Subtotal			367.215	113.668		115.278		129.937		-		129.937	155.725	881.823	N/A

Remarks
 -Developmental Test/Operational Test (DT/OT)
 -Intelligent Telemetry Instrumentation Kit (ITIK)
 -Legacy Telemetry Instrumentation Kits (LTIK)
 -Electronic Safe and Arm Fuze (ESAF)

Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Support	C/CPAF	Not specified. : TBD	0.000	0.250	May 2022	0.910	Mar 2023	-		-		-	0.000	1.160	-
Subtotal			0.000	0.250		0.910		-		-		-	0.000	1.160	N/A

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Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Test Support. Includes flight test equipment, targets, 96th Test Wing and Range Support, AEDC	Various	96 TW, Eglin AFB : TBD	38.920	-		-		-		-		-	0.000	38.920	-
6 IT/6 OT Assets	SS/CPAF	Lockheed Martin : Orlando, FL	12.733	-		-		-		-		-	0.000	12.733	-
12 Operational Test (OT) assets	SS/FFP	Lockheed Martin : Orlando, FL	24.642	-		-		-		-		-	0.000	24.642	24.642
Subtotal			76.295	-		-		-		-		-	0.000	76.295	N/A

Remarks
 Test and Evaluation in FY19 and beyond will be incorporated into each separate development effort rather than broken out into its own category
 -Arnold Engineering Development Complex (AEDC)

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA). Provides program office oversight of development and upgrade activities.	Various	PMA : Eglin AFB, FL	9.600	0.100	Mar 2022	1.010	Mar 2023	3.000	Apr 2024	-		3.000	0.400	14.110	0.000
Subtotal			9.600	0.100		1.010		3.000		-		3.000	0.400	14.110	N/A

	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		453.110	114.018	117.198	132.937	-	132.937	156.125	973.388	N/A

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>RDT&E Schedule Details</i>				
Warfighter Capability Enhancement	1	2022	4	2028
Advanced Survivability, Integration, and Test	1	2022	3	2024
Electronic Safe and Arm Fuze (ESAF)	2	2022	2	2023
ESAF Production Readiness Review (PRR)	3	2022	1	2023
Weapon Data Link	1	2022	4	2026
Diminishing Manufacture Sources and Obsolescence Evaluation/Development	2	2022	4	2028