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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0207325F <i>Joint Air-to-Surface Standoff Missile (JASSM)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	313.576	73.510	70.663	117.325	0.000	117.325	-	-	-	-	-	-
675356: <i>JASSM Extended Range (JASSM-ER)</i>	313.576	73.510	70.663	117.325	0.000	117.325	-	-	-	-	-	-
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, and the follow on missiles). 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 and B-52. Threshold aircraft is the B-1 and Objective aircraft are F-15E, F-16, B-52, B-2, and F-35.

JASSM-ER/AGM-158B-2 is an upgrade to the existing JASSM-ER/AGM-158B, incorporating multiple development initiatives to respond to rapidly changing threats and obsolescence issues. The 2018 National Defense Strategy (NDS) increased the JASSM inventory objective by 48% which resulted in the monitoring/resolution of obsolescence on 13 subsystems. Funding may be used to address Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues.

The FY2022 funding request was reduced by 6.786 million to account for the availability of prior year execution balances.

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 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0M 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.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	78.498	70.792	115.792	0.000	115.792
Current President's Budget	73.510	70.663	117.325	0.000	117.325
Total Adjustments	-4.988	-0.129	1.533	0.000	1.533
• Congressional General Reductions	0.000	-0.129			
• 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	-2.287	0.000			
• SBIR/STTR Transfer	-2.701	0.000			
• Other Adjustments	0.000	0.000	1.533	0.000	1.533

**Change Summary Explanation**

The FY2022 Budget increased to support development of the Weapon Data Link (WDL), additional program protection and cyber security requirements, and AGM-158B-2 integration.

The FY2022 funding request was reduced by \$6.786 million to account for the availability of prior year execution balances.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Warfighting Capability Enhancement	24.134	17.310	28.293	-	28.293
<b>Description:</b> Design and development of software and mission planning changes to ensure the missile maintains operational effectiveness in classified scenarios.					
<b>FY 2021 Plans:</b> Continued flight tests and updated classified software accordingly based on flight test results. Continued modification of classified software to enable the missile to maintain operational effectiveness in classified scenarios.					
<b>FY 2022 Base Plans:</b> 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. FY2022 includes two planned system level flight tests; previous flight tests were at the sub-system					

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>					
level. Begin automation of Target Area Modeling (TAM) process, migrating away from the cumbersome manual update methods.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to an additional requirement to automate TAM through FY2023, increased software level of effort, and the start of warfighter capability enhancement algorithm testing.					
<b>Title:</b> Advanced Survivability, Integration, and Test					
<b>Description:</b> This line of effort is not a new start, but a title update from "Wing Replacement/Chine Development, Survivability Enhancement, and Integration" to "Advanced Survivability, Integration, and Test." The decision to discontinue wing and chine development efforts necessitated this change. 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.					
<b>FY 2021 Plans:</b> Begin AGM-158B-2 flight test program to include contract efforts, in addition to ground/flying test beds, ground mounts, fit checks, captive carry, program protection and other tests as required.					
<b>FY 2022 Base Plans:</b> Continue AGM-158B-2 flight test program to include contract efforts, in addition to ground/flying test beds, ground mounts, fit checks, captive carry, free flight releases, wind tunnel tests, program protection and other tests as required.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to B-1 integration and cyber security implementation, which includes test bed equipment and testing.					
<b>Title:</b> Electronic Safe and Arm Fuze (ESAF)					
<b>Description:</b> ESAF will resolve FMU-156 obsolescence and reliability issues, improve yield, and potentially lower costs.					
<b>FY 2021 Plans:</b> Continue sled testing; begin qualification testing and flight test preparation.					
<b>FY 2022 Base Plans:</b>					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
	28.666	25.426	47.159	-	47.159
	5.921	7.900	1.000	-	1.000

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>					
	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Continue flight test.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to the continuation of flight test with subsequent transition to production.					
<b>Title:</b> Weapons Data Link (WDL)					
<b>Description:</b> This effort includes development, integration and testing efforts, and is currently aimed at improving WDL capabilities to re-target the missile, post-launch, against time sensitive targets during mission execution. Efforts also include, but are not limited to, continued development of alternative communication methods/architecture, and waveforms to advance missile capabilities against critical emerging targets.					
<b>FY 2021 Plans:</b> Begin missile data link interface control documentation, AGM-158B-2 specification update, and System Requirements Review(s) to define technical performance parameters. Start initial trade study to physically integrate the communication methods and develop communications architectures.					
<b>FY 2022 Base Plans:</b> Continue missile data link interface control documentation, AGM-158B-2 specification update, System Requirements Review(s) to define technical performance parameters. Continue trade study to physically integrate the data link in the missile. Begin WDL antenna development, missile airframe reconfiguration effort, and address increased missile system software updates and additional cyber/crypto support.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to WDL antenna development, missile airframe integration reconfiguration effort, missile system software updates and cyber/crypto support.					
	0.000	10.400	37.219	-	37.219
<b>Title:</b> Other Development/Safety/Survivability					
<b>Description:</b> Develop and integrate advanced Precision, Navigation, and Timing (PNT) capabilities (e.g. GPS, M-Code, non-GPS, optical, passive, active, etc.), evaluations (study analysis), survivability enhancements to include safety certification, flight testing, DMSMS, improved Guidance, Navigation, Control (GNC), and obsolescence issues.					
<b>FY 2021 Plans:</b>					
	14.789	9.627	3.654	-	3.654

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Continue evaluation activity to address activities directed by JASSM's obsolescence plan to include safety and survivability studies; begin guidance, navigation, and control (GNC) and autopilot software allocations and updates.  <b>FY 2022 Base Plans:</b> Continue evaluation activity addressing JASSM's obsolescence plan directed activities to include safety and survivability studies. Continue guidance, navigation, and control (GNC) and autopilot software allocations and updates.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to inflation adjustments.					
<b>Accomplishments/Planned Programs Subtotals</b>	73.510	70.663	117.325	-	117.325

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• MPAF 02 0207325F: JASSM	482.507	500.009	702.550	8.000	710.550	-	-	-	-	-	-

**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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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0207325F / Joint Air-to-Surface Standoff Missile (JASSM)				<b>Project (Number/Name)</b> 675356 / JASSM Extended Range (JASSM-ER)							

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Warfighting Capability Enhancement	SS/CPAF	Lockheed Martin : Orlando, FL	9.547	24.134	Nov 2019	17.310	Nov 2020	28.293	Nov 2021	-		28.293	-	-	115.263
Advanced Survivability, Integration, and Test	SS/CPFF	Lockheed Martin : Orlando, FL	34.662	28.666	Nov 2019	25.326	Nov 2020	47.159	Nov 2021	-		47.159	-	-	155.800
ESAF	SS/CPFF	Lockheed Martin : Orlando, FL	20.536	5.921	Nov 2019	7.900	Apr 2021	1.000		-		1.000	-	-	22.331
M-code and Related Development Efforts	SS/CPFF	Lockheed Martin : Orlando, FL	11.531	0.000		0.000		0.000		-		0.000	-	-	11.531
Weapons Data Link	C/CPAF	Lockheed Martin : Orlando, FL	0.000	0.000		10.400	Jul 2021	37.219	Jul 2022	-		37.219	-	-	200.000
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	158.866	12.769	Nov 2019	9.627	Jan 2021	3.554	Jan 2022	-		3.554	-	-	185.000
<b>Subtotal</b>			235.142	71.490		70.563		117.225		-		117.225	-	-	N/A

**Remarks**  
 -Intelligent Telemetry Instrumentation Kit (ITIK)  
 -Legacy Telemetry Instrumentation Kits (LTIK)  
 -Electronic Safe and Arm Fuze (ESAF)

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Government Test Support. Includes flight test equipment, targets, 96th Test Wing and Range Support, AEDC	Various	96 TW, Eglin AFB : TBD	36.528	-		-		-		-		-	-	-	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

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<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
6 IT/6 OT Assets	SS/CPAF	Lockheed Martin : Orlando, FL	12.733	-		-		-		-		-	-	-	-
12 Operational Test (OT) assets	SS/FFP	Lockheed Martin : Orlando, FL	24.642	-		-		-		-		-	-	-	24.643
<b>Subtotal</b>			73.903	-		-		-		-		-	-	-	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

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Program Management Administration (PMA). Provides program office oversight of development and upgrade activities.	Various	PMA : Eglin AFB, FL	4.531	2.020	Mar 2020	0.100	Mar 2021	0.100	Mar 2022	-		0.100	-	-	3.771
<b>Subtotal</b>			4.531	2.020		0.100		0.100		-		0.100	-	-	N/A

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>		313.576	73.510	70.663	117.325	-	-	-	N/A

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0207325F / <i>Joint Air-to-Surface Standoff Missile (JASSM)</i>	<b>Project (Number/Name)</b> 675356 / <i>JASSM Extended Range (JASSM-ER)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>RDT&amp;E Schedule Details</i></b>				
Warfighting Capability Enhancement	1	2020	4	2025
Advanced Survivability, Integration, and Test	1	2020	3	2024
Electronic Safe and Arm Fuze (ESAF)	1	2020	1	2022
ESAF Production Readiness Review (PRR)	3	2021	1	2022
Weapon Data Link	3	2021	2	2024
Diminishing Manufacture Sources and Obsolescence Evaluation/Development	1	2020	4	2026