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Exhibit R-2, RDT&E Budget Item Justification: PB 2023 Air Force **Date:** April 2022

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| 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> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total | FY 2024 | FY 2025 | FY 2026 | FY 2027 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 387.086 | 63.712 | 117.325 | 117.198 | 0.000 | 117.198 | 99.784 | 21.935 | 5.121 | 5.235 | 24.050 | 841.446 |
| 675356: <i>JASSM Extended Range (JASSM-ER)</i> | 387.086 | 63.712 | 117.325 | 117.198 | 0.000 | 117.198 | 99.784 | 21.935 | 5.121 | 5.235 | 24.050 | 841.446 |
| 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 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 gradual insert into the production line as a new missile build once ready. DD-250'd missiles will not be returned for modification to the newest variant.

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 20/FY22 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, 0606398F. In FY21 0.0M was expended for civilian pay expenses in this program element, and in FY22 0.9M is forecasted for civilian pay expenses in this program element.

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

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

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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 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 70.663 | 117.325 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 63.712 | 117.325 | 117.198 | 0.000 | 117.198 |
| Total Adjustments | -6.951 | 0.000 | 117.198 | 0.000 | 117.198 |
| • 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 | -4.700 | 0.000 | | | |
| • SBIR/STTR Transfer | -2.251 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 117.198 | 0.000 | 117.198 |

Change Summary Explanation

FY21: \$-4.7M Above threshold reprogramming source for AF FY21-16 PA DoD FY21-11 PA Omnibus (Non-MIP) FY 21 3rd Implementation

The FY 2022 President's Budget submittal did not reflect FY 2023 through FY 2026 funding. Therefore, an explanation of the change between the two budget positions for FY2023 cannot be made in a relevant manner.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2021 | FY 2022 | FY 2023 |
|---|----------------|----------------|----------------|
| Title: Warfighting Capability Enhancement | 24.081 | 28.293 | 24.786 |
| Description: Design and development of software and mission planning changes to ensure the missile maintains operational effectiveness in classified scenarios. | | | |
| FY 2022 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. FY2022 includes two planned system level flight tests; previous flight tests were at the sub-system level. Begin automation of Target Area Modeling (TAM) process, migrating away from the cumbersome manual update methods. Begin Weapon Data Link (WDL) Software development. | | | |
| FY 2023 Plans: | | | |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2021 | FY 2022 | FY 2023 |
| 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 TAM process. Continue WDL software development. FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to TAM automation development completion. | | | | |
| Title: Advanced Survivability, Integration, and Test 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) 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. FY 2022 Plans: 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, program protection and other tests as required. 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. FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased due to procurement of materials associated with SILs/PILs and ground/flight test assets in previous fiscal years. | | 12.323 | 47.159 | 32.115 |
| Title: Electronic Safe and Arm Fuze (ESAF) Description: ESAF will resolve Fuze Munition Unit-156 (FMU-156) obsolescence and reliability issues, improve yield, and potentially lower costs. FY 2022 Plans: Continue flight test. FY 2023 Plans: | | 6.469 | 1.000 | 0.000 |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2021 | FY 2022 | FY 2023 |
| Effort will be complete resulting in a fully qualified FMU-156 B/B ESAF. | | | | |
| FY 2022 to FY 2023 Increase/Decrease Statement: Funding decreased because the effort will complete. | | | | |
| Title: Weapon Data Link (WDL) | | 14.330 | 37.219 | 56.782 |
| Description: 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. | | | | |
| FY 2022 Plans: Continue missile data link interface control documentation, AGM-158B-2 specification update, and System Requirements Review(s) to define technical performance parameters. Begin WDL antenna development, missile airframe reconfiguration effort, and address increased missile system software updates and additional cyber/crypto support. | | | | |
| FY 2023 Plans: Continue WDL radio/antenna development, integration, conduct system-level hardware demonstrations (to include infrastructure testing), and begin testing/qual activities required for All-Up-Round (AUR) integration and flight testing targeted in FY23. | | | | |
| FY 2022 to FY 2023 Increase/Decrease Statement: Funding increased due to physical integration and flight test, which drive higher costs than radio development. | | | | |
| Title: Other Development/Safety/Survivability | | 6.509 | 3.654 | 3.515 |
| Description: 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. | | | | |
| FY 2022 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. | | | | |
| 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. | | | | |
| FY 2022 to FY 2023 Increase/Decrease Statement: | | | | |

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|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2021 | FY 2022 | FY 2023 |
|---|----------------|----------------|----------------|
| Funding decreased because the Intelligent Telemetry Instrumentation Kit (ITiK) Re-packaging finishes in FY22. | | | |
| Accomplishments/Planned Programs Subtotals | 63.712 | 117.325 | 117.198 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total | FY 2024 | FY 2025 | FY 2026 | FY 2027 | Cost To Complete | Total Cost |
| • MPAF 02 0207325F: JASSM | 493.439 | 710.550 | 784.971 | - | 784.971 | 852.706 | 999.215 | 994.919 | 1,001.656 | 0.000 | 5,837.456 |

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 2023 Air Force **Date:** April 2022

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| 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 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | 33.681 | 24.081 | Nov 2020 | 28.293 | Nov 2021 | 24.786 | Nov 2022 | - | | 24.786 | 41.466 | 152.307 | 153.217 |
| Advanced Survivability, Integration, and Test | SS/CPFF | Lockheed Martin : Orlando, FL | 63.424 | 12.323 | Nov 2020 | 47.159 | Nov 2021 | 32.115 | Nov 2022 | - | | 32.115 | 15.444 | 170.465 | 160.000 |
| ESAF | SS/CPFF | Lockheed Martin : Orlando, FL | 26.360 | 6.469 | Apr 2021 | 1.000 | Mar 2022 | 0.000 | | - | | 0.000 | 0.000 | 33.829 | 22.331 |
| M-code and Related Development Efforts | SS/CPFF | Lockheed Martin : Orlando, FL | 11.539 | 0.000 | | - | | - | | - | | - | 0.000 | 11.539 | 11.531 |
| Weapon Data Link | C/CPFF | Various : Orlando, FL | 0.000 | 14.330 | Apr 2021 | 37.219 | Dec 2021 | 56.782 | Dec 2022 | - | | 56.782 | 80.218 | 188.549 | 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 | 171.635 | 1.061 | Jan 2021 | 3.554 | Jan 2022 | 2.505 | Mar 2023 | - | | 2.505 | 18.597 | 197.352 | 185.000 |
| Subtotal | | | 306.639 | 58.264 | | 117.225 | | 116.188 | | - | | 116.188 | 155.725 | 754.041 | 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)

| Test and Evaluation (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2023 Air Force **Date:** April 2022

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| 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) |
|--|---|--|

| Test and Evaluation (\$ in Millions) | | | | FY 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | | | |
| 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 2021 | | FY 2022 | | FY 2023 Base | | FY 2023 OCO | | FY 2023 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 | 4.152 | 5.448 | Mar 2021 | 0.100 | Mar 2022 | 1.010 | Mar 2023 | - | | 1.010 | 0.400 | 11.110 | 0.000 |
| Subtotal | | | 4.152 | 5.448 | | 0.100 | | 1.010 | | - | | 1.010 | 0.400 | 11.110 | N/A |

| | Prior Years | FY 2021 | FY 2022 | FY 2023 Base | FY 2023 OCO | FY 2023 Total | Cost To Complete | Total Cost | Target Value of Contract | |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| Project Cost Totals | | 387.086 | 63.712 | 117.325 | 117.198 | - | 117.198 | 156.125 | 841.446 | N/A |

Remarks

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| Exhibit R-4A, RDT&E Schedule Details: PB 2023 Air Force | | Date: April 2022 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0207325F / <i>Joint Air-to-Surface Standoff Missile (JASSM)</i> | Project (Number/Name) 675356 / <i>JASSM Extended Range (JASSM-ER)</i> |

Schedule Details

| Events by Sub Project | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>RDT&E Schedule Details</i> | | | | |
| Warfighter Capability Enhancement | 1 | 2021 | 4 | 2027 |
| Advanced Survivability, Integration, and Test | 1 | 2021 | 3 | 2024 |
| Electronic Safe and Arm Fuze (ESAF) | 1 | 2021 | 1 | 2023 |
| ESAF Production Readiness Review (PRR) | 3 | 2021 | 4 | 2022 |
| Weapon Data Link | 3 | 2021 | 4 | 2025 |
| Diminishing Manufacture Sources and Obsolescence Evaluation/Development | 1 | 2021 | 4 | 2027 |