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

| | |
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| Appropriation/Budget Activity 2040: Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV |
|--|---|

| 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 | - | - | - | 6.629 | - | 6.629 | 6.838 | 6.945 | 7.052 | 7.260 | Continuing | Continuing |
| MQ2: MQ-1C Gray Eagle Modifications | - | - | - | 6.629 | - | 6.629 | 6.838 | 6.945 | 7.052 | 7.260 | Continuing | Continuing |

Program MDAP/MAIS Code: 420

Note

The funding in this PE was restructured from PE 0203744A (Aircraft Modifications/Product Improvement Programs).

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides the Army with an extended range, multi-purpose (ERMP) Unmanned Aircraft System (UAS); capable of executing reconnaissance, security, attack, and intelligence collection missions in the range of military operations (ROMO). Sensors/payloads include an Electro-Optical/Infrared/Laser Designator (EO/IR/LD), Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI), Signals Intelligence (SIGINT), and HELLFIRE missiles; providing a near all-weather mission capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission UAS fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities within multi-domain battle operations.

FY2024 RDTE dollars, in the amount of \$6.629M, supports development efforts required for integration of vision based navigation (VBN) onto MQ-1C Gray Eagle platforms. This complementary navigation solution supports the ability of the platform to Survive, Persist, and Thrive (continue mission) in Global Positioning System (GPS) denied/contested environments (emerging GPS threats). M-Code transition is required by public law 111-383.

| B. Program Change Summary (\$ in Millions) | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | - | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 6.629 | - | 6.629 |
| Total Adjustments | 0.000 | 0.000 | 6.629 | - | 6.629 |
| • Congressional General Reductions | - | - | | | |
| • Congressional Directed Reductions | - | - | | | |
| • Congressional Rescissions | - | - | | | |
| • Congressional Adds | - | - | | | |
| • Congressional Directed Transfers | - | - | | | |
| • Reprogrammings | - | - | | | |
| • SBIR/STTR Transfer | - | - | | | |
| • Adjustments to Budget Years | - | - | 6.629 | - | 6.629 |

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| Appropriation/Budget Activity 2040: <i>Research, Development, Test & Evaluation, Army / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV | |

Change Summary Explanation

In August 2022, all funding (beginning with FY24) was transferred from PE 0270344A (Aircraft Modifications/Product Improvement Programs) / Project code EB6. There was \$0.00 funding for FY2023. The FY2024 Funds of \$6.629M is for the Assured Positioning Navigation and Timing requirement identified in the CPD for ERMP UAS MQ-1C Version 8.7, Rev 3 July 10,2015 subsection CPD 6b(3)f(1-2). The total requirement, \$34.724M, will carry through FY2024 - FY2028. A-PNT is a solution to Survive, Persist, and Thrive in GPS denied/contested environments (emerging GPS threats).

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Army **Date:** March 2023

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| Appropriation/Budget Activity 2040 / 7 | R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV | Project (Number/Name) MQ2 / MQ-1C Gray Eagle Modifications |
|--|---|--|

| 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 |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| MQ2: MQ-1C Gray Eagle Modifications | - | - | - | 6.629 | - | 6.629 | 6.838 | 6.945 | 7.052 | 7.260 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

The funding in this PE was restructured from PE 0203744A (Aircraft Modifications/Product Improvement Programs).

A. Mission Description and Budget Item Justification

The MQ-1C Gray Eagle provides the Army with an extended range, multi-purpose (ERMP) Unmanned Aircraft System (UAS); capable of executing reconnaissance, security, attack, and intelligence collection missions in the range of military operations (ROMO). Sensors/payloads include an Electro-Optical/Infrared/Laser Designator (EO/IR/LD), Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI), Signals Intelligence (SIGINT), and HELLFIRE missiles; providing a near all-weather mission capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission UAS fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities within multi-domain battle operations.

FY2024 RDTE dollars, in the amount of \$6.629M, supports development efforts required for integration of vision based navigation (VBN) onto MQ-1C Gray Eagle platforms. This complementary navigation solution supports the ability of the platform to Survive, Persist, and Thrive (continue mission) in Global Positioning System (GPS) denied/contested environments (emerging GPS threats).

B. Accomplishments/Planned Programs (\$ in Millions)

| | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| Title: Assured Positioning, Navigation, & Timing | - | - | 6.629 |
| FY 2024 Plans: FY2024 RDTE dollars, in the amount of \$6.629M, supports development efforts required for integration of vision based navigation (VBN) onto MQ-1C Gray Eagle platforms. This complementary navigation solution supports the ability of the platform to Survive, Persist, and Thrive (continue mission) in GPS denied/contested environments (emerging GPS threats). | | | |
| FY 2023 to FY 2024 Increase/Decrease Statement: This funding was transferred from PE 0270344A (Aircraft Modifications/Product Improvement Programs). The former PE had \$0.00 funding for FY2023. The FY2024 Funds of \$6.629M is for the A-PNT requirement and will carry through FY2028 with total \$34.724M for FY2024 - FY2028. | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 6.629 |

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| Appropriation/Budget Activity 2040 / 7 | R-1 Program Element (Number/Name) PE 0305219A / MQ-1 Gray Eagle UAV | Project (Number/Name) MQ2 / MQ-1C Gray Eagle Modifications |
|--|---|--|

C. Other Program Funding Summary (\$ in Millions)

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> <u>Base</u> | <u>FY 2024</u> <u>OCO</u> | <u>FY 2024</u> <u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|-----------------------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • AA6601: <i>Gray Eagle Mods2</i> | 123.143 | 133.038 | 14.959 | - | 14.959 | 3.916 | 5.138 | 5.668 | 10.782 | 0.000 | 296.644 |

Remarks

D. Acquisition Strategy

An ERMP Operational Requirement Document (ORD) was approved by the Joint Requirement Oversight Council (JROC) 6 Apr 2005. Milestone B occurred on 20 Apr 2005, and the System Development and Demonstration contract was awarded 8 Aug 2005, as a result of a competitive solicitation which included a vendor system capabilities demonstration. A Capabilities Production Document (CPD) was approved 14 Mar 2009. MQ-1C Gray Eagle completed Follow-On Test and Evaluation (FOTE) on 12 Jun 2015.

This RDTE effort funds development/integration and test of key Assured Positioning Navigation and Timing (A-PNT) efforts for Gray Eagle. These include Vision Based Navigation (VBN), which will provide a "non-GPS" based navigation solution on the Gray Eagle aircraft. VBN provides an alternate means of estimating aircraft position during GPS denial/outage by tracking aircraft movement using video imagery. Additionally, the RDTE effort will fund integration of an independent timing source to maintain functionality of time dependent components on the aircraft. Outyear RDTE will fund the selection and integration of an M-Code compatible/capable 3rd Navigator to replace the current obsolete Athena 511 GPS receiver, and also fund the development of other complementary/alternate A-PNT systems. The inclusion of these capabilities on the Gray Eagle aircraft increases survivability and help ensure operators can continue mission in GPS contested environments. M-Code transition is required by public law 111-383.

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Army **Date:** March 2023

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|--|---|--|
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|--|---|--|

| Event Name | FY 2022 | | | | FY 2023 | | | | FY 2024 | | | | FY 2025 | | | | FY 2026 | | | | FY 2027 | | | | FY 2028 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Assured Positioning, Navigation & Timing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | A-PNT | | | | | | | | | | | | | | | | | | | |

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

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Assured Positioning, Navigation & Timing | 2 | 2024 | 4 | 2029 |