Department of Defense
Fiscal Year (FY) 2020 Budget Estimates
March 2019

Army
Justification Book of
Aircraft Procurement, Army
FY2020 Aircraft Procurement, Army
Introduction and Explanation of Contents

Comptroller Exhibit P-1

Line Item Table of Contents (by Appropriation then Line Number)

Line Item Table of Contents (Alphabetically by Line Item Title)

Exhibit P-40s
Cost Statement

The following Justification Books were prepared at a cost of $366,803.08: Aircraft (ACFT), Missile (MSLS), Weapons & Tracked Combat Vehicles (WTCV), Ammunition (AMMO), Other Procurement Army (OPA) 1 - Tactical & Support Vehicles, Other Procurement Army (OPA) 2 – Communications & Electronics, Other Procurement Army (OPA) 3 & 4 - Other Support Equipment & Spares, Research, Development, Test and Evaluation (RDTE) for: Budget Activity 1, Budget Activity 2, Budget Activity 3, Budget Activity 4, Budget Activity 5A, Budget Activity 5B, Budget Activity 6, and Budget Activity 7.
For construction, procurement, modification, and modernization of aircraft equipment, including ordnance, spare parts, accessories therefore; specialized equipment; expansion of public and private plants, including the land necessary therefore, and such lands and interests therein, may be acquired, and construction prosecuted thereon prior to approval of title; and procurement and installation of equipment, appliances, and machine tools in public and private plants; reserve plant and Government and contractor-owned equipment layaway, $3,696,429,000 Base and $381,541,000 OCO to remain available for obligations until September 30, 2022.

FY 2020 Overseas Contingency Operations funding can be separated into the following categories:

- **OCO for Direct War Costs ($381,531,000):** Direct War costs are those combat or direct combat support costs that will not continue to be expended once combat operations end at major contingency locations.
- **OCO for Enduring Requirements ($10,000)** OCO for Enduring Requirements are enduring in-theater and in-CONUS costs that will likely remain after combat operations cease, and have previously been funded in OCO.
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Appropriation: Aircraft Procurement, Army

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Appropriation: Aircraft Procurement, Army

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### Appropriation: 2031A Aircraft Procurement, Army

#### Budget Activity 01: Aircraft

**Fixed Wing**

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**Rotary**

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**UNCLASSIFIED**

Department of the Army
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

11 Feb 2019

Appropriation: 2031A Aircraft Procurement, Army

<table>
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<td>C (FY 2018 for FY 2019) (M)</td>
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P-120PB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03
Appropriation: 2031A Aircraft Procurement, Army

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Department of the Army
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands) 11 Feb 2019

Appropriation: 2031A Aircraft Procurement, Army

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<th>FY 2020 OCO for Base Requirements Quantity</th>
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<th>FY 2020 Total OCO Costs Quantity</th>
<th>Total in FY 2020</th>
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F-120FB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03

UNCLASSIFIED
Appropriation: 2031A Aircraft Procurement, Army

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P-120PB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03
### Budget Activity 02: Modification of Aircraft

#### Modification of Aircraft

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P-120FB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03
UNCLASSIFIED

Department of the Army
FY 2020 President's Budget
Exhibit P-1 FY 2020 President's Budget
Total Obligational Authority
(Dollars in Thousands)

Appropriation: 2031A Aircraft Procurement, Army

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P-120PB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03
Appropriation: 2031A Aircraft Procurement, Army

### FY 2020

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P-120PB: FY 2020 President’s Budget (Published Version), as of February 11, 2019 at 14:58:03
Appropriation: 2031A Aircraft Procurement, Army

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**Budget Activity 04: Support Equipment and Facilities**

- **Ground Support Avionics**
  - 36 Survivability CM: 5,884, FY 2019: 5,853, Total: 5,853 U
  - 37 CMWS: 197,467, FY 2019: 84,037, Total: 97,883 U
  - 38 Common Infrared Countermeasures (CIRCM): 80,677, FY 2019: 24,060, Total: 60,899 U

- **Other Support**
  - 40 Common Ground Equipment: 47,404, FY 2019: 34,818, Total: 34,818 U
  - 43 Industrial Facilities: 1,397, FY 2019: 1,417, Total: 1,417 U
  - 44 Launcher, 2.75 Rocket: 1,911, FY 2019: 1,901, Total: 1,901 U


**Total Aircraft Procurement, Army**: 5,983,531, 4,299,566, 346,963, 4,646,529

P-120PB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03

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### Appropriation: 2031A Aircraft Procurement, Army

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11 Feb 2019
Appropriation: 2031A Aircraft Procurement, Army

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Total Support Equipment and Facilities

Total Aircraft Procurement, Army

P-120PB: FY 2020 President's Budget (Published Version), as of February 11, 2019 at 14:58:03
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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

P-1 Line Item Number / Title:
1301A11301 / SATURN ARCH (MIP)

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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<th>FY 2020 Total</th>
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<th>FY 2023</th>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |

Description:
The Saturn Arch aircraft are Airborne Intelligence, Surveillance and Reconnaissance (AISR) aircraft that support a suite of imaging sensors designed to provide persistent surveillance to accomplish day and night image collection and exploitation of Improvised Explosive Devices (IEDs) in designated Named Areas of Interest (NAIs).

The Saturn Arch systems are under the control of operational commanders within USCENTCOM.

Justification:
FY 18 OCO procurement dollars of $40.000 million supports the procurement of one (1) De Havilland -8 315 series commercial aircraft, Mission Equipment Package (MEP) and the MEP to aircraft integration in support of JUONS CC-0541.
All COMPO 1 Active

"In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities."

LI 1301A11301 - SATURN ARCH (MIP)

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Page 1 of 1

P-1 Line #1
**Exhibit P-40, Budget Line Item Justification:**

**PB 2020 Army**

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**

2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

**P-1 Line Item Number / Title:**

9440A11300 / Utility F/W Aircraft

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

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<th>FY 2020 OCO</th>
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*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

| Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | 9,059.378 | 25,038.333 | 9,322.000 | 16,000.000 | - | 16,000.000 | - | - | - | - | - | 10,347.814 |

**Description:**

The budget line funds the acquisition of Army Fixed Wing Aircraft in support of mission requirements, training, and other support activities. Fixed Wing Aircraft will be capable of self-deploying over extended ranges; provide CONUS/OCONUS time sensitive movement of key personnel and equipment; support to homeland defense/security operations; support to civil and military authorities. This budget line also provides for the acquisition of new commercial-off-the-shelf (COTS), modified COTS, and non-developmental Fixed Wing Aircraft systems including used aircraft systems.

Average unit cost is variable and dependent upon aircraft selection and requirements.

FY18 Aircraft Procurement - Army (APA) funding was used to procure one (1) Army Golden Knights Parachute Team C-147A aircraft and spares. Program office is prepared to release a Request for Project Proposal (RPP) for at least two (2) FUA to be procured through Other Transaction Agreement (OTA) award in 3QFY19. Expect Army decision by 3QFY19 to proceed with release of RPP.

Congressional Mark Added in FY19 in the amount of $17.900 million to this line for Enhanced Medium Altitude Reconnaissance and Surveillance System ELINT (EMARSS-E). Expect OTA Award by 3QFY19.

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army  
Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:  
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

P-1 Line Item Number / Title:  
9440A11300 / Utility F/W Aircraft

ID Code (A=Service Ready, B=Not Service Ready): 
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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<td>1 / 16.000</td>
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Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Base procurement dollars in the amount of $16.000 million will support Fixed Wing Aircraft, spares procurement, Engineering Change Proposals (ECPs) and PM cost.

This funding line has been used for the procurement of multiple aircraft and does not have a single Army Acquisition Objective (AAO). Average unit cost is variable and dependent upon aircraft selection and requirements. This funding line has been used to procure multiple aircraft types both new and used.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9440A11300 / Utility F/W Aircraft

**Item Number / Title [DODIC]:**
A11300 / Utility F/W Aircraft

**ID Code** (A=Service Ready, B=Not Service Ready):

**MDAP/MAIS Code:**

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(For additional rows, refer to the correspondence budget requests documented elsewhere)

#### Note:
Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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**Note:** The following rows are for informational purposes only. The corresponding budget requests are documented elsewhere.

**Resource Summary:**

- **Support - Engineering Change Proposals Cost**
- **Support - Data Cost**
- **Support - Common Support Equipment Cost**
- **Aircraft Procurement/ Modification**
- **Systems Test and Evaluation**
- **Integration Engineering**
- **Initial Spares**
- **Engineering Changes**
- **Gross/Weapon System Cost**
- **Net Procurement (P-1)**
- **Total Obligation Authority**
## Exhibit P-5, Cost Analysis: PB 2020 Army

### Appropation / Budget Activity / Budget Sub Activity: 2031A / 01 / 10

### P-1 Line Item Number / Title: 9440A11300 / Utility F/W Aircraft

### Item Number / Title [DODIC]: A11300 / Utility F/W Aircraft

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Exhibit P-5, Cost Analysis:

#### PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 10

**P-1 Line Item Number / Title:** 9440A11300 / Utility F/W Aircraft

**Item Number / Title [DODIC]:** A11300 / Utility F/W Aircraft

---

### MDAP/MAIS Code:

**ID Code** (A=Service Ready, B=Not Service Ready)

---

### To Do

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 10

**P-1 Line Item Number / Title:** 9440A11300 / Utility F/W Aircraft

**Item Number / Title [DODIC]:** A11300 / Utility F/W Aircraft

---

### Secondary Distribution

#### FY 2018

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#### FY 2019

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#### FY 2020

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#### FY 2020

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<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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### Remarks:

This funding line has been used for the procurement of multiple aircraft and does not have a single Army Acquisition Objective (AAO). Average unit cost is variable and dependent upon aircraft selection and requirements. This funding line has been used to procure multiple aircraft types both new and used.

FY18 Aircraft Procurement Army (APA) funding was used to procure one (1) Army Golden Knights Parachute Team C-147A aircraft and spares. Program office is prepared to release a Request for Project Proposal (RPP) for at least two (2) Fixed Wing Utility Aircraft (FUA) to be procured through Other Transaction Agreement (OTA) award in 3QFY19. Expect Army decision by 3QFY19 to proceed with release of RPP.

Congressional Mark Added in FY19 in the amount of $17.900 million to this line for Enhanced Medium Altitude Reconnaissance and Surveillance System ELINT (EMARSS-E). Expect OTA Award by 3QFY19.
UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA: Fixed Wing

P-1 Line Item Number / Title:
9670A00005 / MQ-1 UAV

Date: March 2019

ID Code (A=Service Ready, B=Not Service Ready): A
Program Elements for Code B Items: N/A
Other Related Program Elements: 0305204A, 0305219A

Resource Summary

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Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Unit Cost ($ in Thousands) | 17,170.916 | 11,225.300 | 16,332.600 | - | 9,000.000 | 9,000.000 | 9,000.000 | - | - | - | - | 16,203.764 |

(description of MQ-1C Gray Eagle and its functions)

4 May 2017, the Army approved an Army Acquisition Objective (AAO) adjustment to bring the total requirement to 204 MQ-1C Gray Eagle aircraft.

Secondary Distribution

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

P-1 Line Item Number / Title:
9670A00005 / MQ-1 UAV

ID Code (A=Service Ready, B=Not Service Ready): A
Program Elements for Code B Items: N/A
Other Related Program Elements: 0305204A, 0305219A
Line Item MDAP/MAIS Code: N/A

Exhibits Schedule

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<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
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<td>A00005 / MQ-1 UAV</td>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
The $54.000 million FY 2020 OCO funding supports the procurement of six (6) MQ-1C Gray Eagle Extended Range War Replacement Aircraft (WRA).

"In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities."

LI 9670A00005 - MQ-1 UAV
Army
### Resource Summary

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<tr>
<th>Procurement Quantity (Units in Each)</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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### Cost Elements

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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.
## Exhibit P-5, Cost Analysis: PB 2020 Army

### Appropriation / Budget Activity / Budget Sub Activity:
- 2031A / 01 / 10

### P-1 Line Item Number / Title:
- 9670A00005 / MQ-1 UAV

#### ID Code
- (A=Service Ready, B=Not Service Ready) : A

#### MDAP/MAIS Code:
- UNCLASSIFIED

#### Date:
- March 2019

### Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9670A00005 / MQ-1 UAV

**Item Number / Title [DODIC]:**
A00005 / MQ-1 UAV

**ID Code** (A=Service Ready, B=Not Service Ready) : A

**Date:** March 2019

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
<tr>
<td></td>
<td>Unit Cost ($ K)</td>
<td>Qty (Each)</td>
<td>Total Cost ($ M)</td>
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<td>Qty (Each)</td>
<td>Total Cost ($ M)</td>
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**Secondary Distribution**

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(†) indicates the presence of a P-5a
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<th>Cost Elements</th>
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<th>Contractor and Location</th>
<th>Method/Type or Funding Vehicle</th>
<th>Location of PCO</th>
<th>Award Date</th>
<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
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† indicates the presence of a P-21

Remarks:
FY2012 LRIP III delivery schedule is for 12 months and one (1) day.
FY2013 MQ-1C Gray Eagle exercised the option for four (4) aircraft, and four (4) SATCOM Air Data Terminals (SADT) with FY14 APA funds.
FY2014 FRP II delivery schedule included an option for four (4) aircraft. The option exercised approximately three (3) months after base contract award therefore extending the delivery schedule.
FY2015 FRP III delivery schedule is for the procurement of 19 aircraft and associated equipment.
FY2016 FRP IV delivery schedule is for the procurement of 20 aircraft and associated equipment.
FY2019 procurement quantity is for 10 MQ-1C Gray Eagle Extended Range aircraft and funding for the MQ-1C Gray Eagle Service Life Extension Program.
Additional Justification and Authority (J&A) approval required to procure one (1) FY2019 Aircraft and six (6) FY2020 Aircraft.
Additional Justification and Authority (J&A) approval required to procure War Replacement Aircraft, six (6) Aircraft FY2021, six (6) Aircraft FY2022, and six (6) Aircraft FY2023.
### Exhibit P-21, Production Schedule: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 01 / 10

#### P-1 Line Item Number / Title:
9670A00005 / MQ-1 UAV

#### Item Number / Title [DODIC]:
A00005 / MQ-1 UAV

### Cost Elements
(Units in Each)

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<td></td>
<td>T</td>
<td>V</td>
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<td>Aircraft</td>
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<tr>
<td>Prior Years Deliveries: 25</td>
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#### Aircraft

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<tr>
<td>2013</td>
<td>ARMY</td>
<td>19</td>
<td>0</td>
<td>19</td>
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<td>2014</td>
<td>ARMY</td>
<td>23</td>
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### Aircraft Prior Years Deliveries:

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- **2012**: ARMY - 29
- **2013**: ARMY - 19
- **2014**: ARMY - 23
- **2015**: ARMY - 19
- **2016**: ARMY - 20
- **2017**: ARMY - 26
- **2018**: ARMY - 20
- **2019**: ARMY - 10
- **2020**: ARMY - 5

### Aircraft 2020:

- **2020**: ARMY - 5

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UNCLASSIFIED
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LI 9670A00005 - MQ-1 UAV

UNCLASSIFIED

UNCLASSIFIED

Exhibit P-21, Production Schedule: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 10

P-1 Line Item Number / Title: 9670A00005 / MQ-1 UAV

Item Number / Title [DODIC]: A00005 / MQ-1 UAV

Date: March 2019

Page 9 of 14
### Cost Elements (Units in Each) - Fiscal Year 2015

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Aircraft Prior Years Deliveries: 25
**Exhibit P-21, Production Schedule: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9670A00005 / MQ-1 UAV

**Item Number / Title [DODIC]:**
A00005 / MQ-1 UAV

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**Cost Elements**

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**Aircraft**

Prior Years Deliveries: 25

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**Date:** March 2019
**Exhibit P-21, Production Schedule: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 10

**P-1 Line Item Number / Title:** 9670A00005 / MQ-1 UAV

**Item Number / Title [DODIC]:** A00005 / MQ-1 UAV

**Date:** March 2019

---

### Cost Elements (Units in Each)

|    |   |   |   |   |    |         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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### Prior Years Deliveries: 25

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### Aircraft Costs

**Fiscal Year 2019**

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<tbody>
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**Fiscal Year 2020**

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**Total**:

- Fiscal Year 2019: 100
- Fiscal Year 2020: 60

UNCLASSIFIED
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9670A00005 / MQ-1 UAV

**Item Number / Title [DODIC]:**
A00005 / MQ-1 UAV

**Date:** March 2019

#### Cost Elements

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**Aircraft Prior Years Deliveries:** 25

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**Aircraft Prior Years Deliveries:** 25

<table>
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<th>BAL DUE AS OF 1 OCT</th>
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**Aircraft Prior Years Deliveries:** 25
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9670A00005 / MQ-1 UAV

**Item Number / Title [DODIC]:**
A00005 / MQ-1 UAV

**Date:** March 2019

<table>
<thead>
<tr>
<th>Manufacturer Name - Location</th>
<th>Production Rates (Each / Month)</th>
<th>Procurement Leadtime (Months)</th>
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<tr>
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<tr>
<td>1 GENERAL ATOMICS / ASI - SAN DIEGO</td>
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**Remarks:**
- FY2012 LRIP III delivery schedule is for 12 months and one (1) day.
- FY2013 MQ-1C Gray Eagle exercised the option for four (4) aircraft, and four (4) SATCOM Air Data Terminals (SADT) with FY14 APA funds.
- FY2014 FRP II delivery schedule included an option for four (4) aircraft. The option exercised approximately three (3) months after base contract award therefore extending the delivery schedule.
- FY2015 FRP III delivery schedule is for the procurement of 19 aircraft and associated equipment.
- FY2016 FRP IV delivery schedule is for the procurement of 20 aircraft and associated equipment.
- FY2019 procurement quantity is for 10 MQ-1C Gray Eagle Extended Range aircraft and funding for the MQ-1C Gray Eagle Service Life Extension Program.
- Additional Justification and Authority (J&A) approval required to procure one (1) FY2019 Aircraft and six (6) FY2020 Aircraft.
- Additional Justification and Authority (J&A) approval required to procure War Replacement Aircraft, six (6) FY2021 Aircraft, six (6) Aircraft FY2022, and six (6) Aircraft FY2023.

*"A" in the Delivery Schedule indicates the Contract Award Date.*

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

P-1 Line Item Number / Title:
9675A00010 / RQ-11 (RAVEN)

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: 0305232A

Line Item MDAP/MAIS Code: N/A

### Resource Summary

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<th>FY 2020 OCO</th>
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<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>253.122</td>
<td>46.416</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Description:**
The Rucksack Portable Unmanned Aircraft System (RPUAS) Family of Small Unmanned Aircraft Systems (FoSUAS) provides the battalion and below ground maneuver elements with an organic, on-demand, asset to develop situational awareness, enhance force protection, and secure routes, points, and areas. The system provides the small unit commander an organic and responsive reconnaissance and targeting capability with real-time Full Motion Video and sensor data. The RPUAS FoSUAS includes a combination of three separate hand-launched mission specific configurable aircraft that do not require an improved launch/recovery. The three separate mission specific configurable (Unmanned Aircraft) UA are the Short Range Reconnaissance (SRR) (formerly the Short Range Micro (SRM)), the Medium Range Reconnaissance (MRR), and the Long Range Reconnaissance (LRR). Funding in FY19 is for 200 Raven Systems, Initial Spares Packages, training, fielding, and Program Support for the Security Force Assistance Brigades (SFAB). FY19 also supports 258 Short Range Reconnaissance (SSR) air vehicles, Initial Spares Packages, training, fielding, and Program Support.

**Secondary Distribution**

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<th>FY 2022</th>
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<td>Total Obligation Authority</td>
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<td>23.510</td>
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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 10: Fixed Wing

**P-1 Line Item Number / Title:**
9675A00010 / RQ-11 (RAVEN)

**ID Code** (A=Service Ready, B=Not Service Ready):

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** 0305232A

**Line Item MDAP/MAIS Code:** N/A

**Exhibits Schedule**

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<tr>
<th>Exhibit Type</th>
<th>Title*</th>
<th>Subexhibits</th>
<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<td>-</td>
<td>- / 46.416</td>
<td>-</td>
<td>- / 23.510</td>
</tr>
</tbody>
</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**

Justification: FY2020 Base procurement dollars in the amount of $23.510 million supports procurement of 475 Short Range Reconnaissance (SRR) air vehicles. Remaining funding is for initial spares packages, training, fielding, technical and program support.

Note: P-1 FY2019 quantity is in error. P-40 FY2019 quantity justification is correct.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
**UNCLASSIFIED**

**Exhibit P-5, Cost Analysis: PB 2020 Army**

<table>
<thead>
<tr>
<th>ID Code (A=Service Ready, B=Not Service Ready) :</th>
<th>MDAP/MAIS Code:</th>
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**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9675A00010 / RQ-11 (RAVEN)

**Item Number / Title [DODIC]:**
A00010 / RQ-11 (RAVEN)

**Date:**
March 2019

**Resource Summary**

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<th>Procurement Quantity (Units in Each)</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
<tr>
<td><strong>Less PY Advance Procurement ($ in Millions)</strong></td>
<td>-</td>
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<td>23.510</td>
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<tr>
<td><strong>Plus CY Advance Procurement ($ in Millions)</strong></td>
<td>-</td>
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<tr>
<td><strong>Total Obligation Authority ($ in Millions)</strong></td>
<td>253.122</td>
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<td>46.416</td>
<td>23.510</td>
<td>-</td>
<td>23.510</td>
</tr>
</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Initial Spares ($ in Millions)**
- FY 2018: -
- FY 2019: -
- FY 2020 Total: -

**Gross/Weapon System Unit Cost ($ in Thousands)**
- FY 2018: 101.345
- FY 2019: 49.495
- FY 2020 Total: 49.495

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

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<thead>
<tr>
<th>Prior Years</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
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<td>Recurring Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>RQ-11 B Raven Air Vehicle, GCS/RVT, EO</strong></td>
<td>9.856</td>
<td>6,525</td>
<td>64.309</td>
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<td>2.525</td>
<td>6,525</td>
<td>16.477</td>
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<td><strong>RQ-11B Raven Operator Training</strong></td>
<td>-</td>
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<td><strong>RQ-11B Other System Hardware</strong></td>
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<td><strong>RQ-11B Digital Data Link Retrofit</strong></td>
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<td>1,318</td>
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<td><strong>RQ-11B Gimbal Payload Retrofit</strong></td>
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<td><strong>RQ-11B Government Furnished Equipment (GFE)</strong></td>
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<td><strong>RQ-11B Other Government Agencies/ Core</strong></td>
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<td><strong>RQ-11B Logistics (fielding)</strong></td>
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<td><strong>SRR Initial Spares Package (ISP)</strong></td>
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<td>2.598</td>
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Exhibit P-5, Cost Analysis: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 10
P-1 Line Item Number / Title: 9675A00010 / RQ-11 (RAVEN)

Item Number / Title [DODIC]: A00010 / RQ-11 (RAVEN)

Date: March 2019

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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</thead>
<tbody>
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<td></td>
<td>Unit Cost</td>
<td>Qty</td>
<td>Total Cost</td>
<td>Unit Cost</td>
<td>Qty</td>
<td>Total Cost</td>
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<td>SRR Training</td>
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<td>$ -</td>
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<td>SRR Logistics (Fielding)</td>
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<td>Subtotal: Recurring Cost</td>
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<td>-</td>
<td>-</td>
<td>$ -</td>
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<tr>
<td>SRR: Hardware Cost</td>
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<td>-</td>
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<td>$ -</td>
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<tr>
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<td>-</td>
<td>$ 131,560</td>
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<td>Short Range Reconnaissance (SRR) Air Vehicles&lt;sup&gt;(1)&lt;/sup&gt;</td>
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<td>$ 101,345</td>
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(1) indicates the presence of a P-5a

Secondary Distribution

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<th>FY 2020 Total</th>
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<td>23,510</td>
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LI 9675A00010 - RQ-11 (RAVEN)

Army
### Exhibit P-5a, Procurement History and Planning: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 10

**P-1 Line Item Number / Title:** 9675A00010 / RQ-11 (RAVEN)

**Item Number / Title [DODIC]:** A00010 / RQ-11 (RAVEN)

**Date:** March 2019

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>O C O</th>
<th>FY</th>
<th>Contractor and Location</th>
<th>Method/Type or Funding Vehicle</th>
<th>Location of PCO</th>
<th>Award Date</th>
<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
<th>Specs Avail Now?</th>
<th>Date Revision Available</th>
<th>RFP Issue Date</th>
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[^1]: indicates the presence of a P-21
Exhibit P-21, Production Schedule: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 10

P-1 Line Item Number / Title: 9675A00010 / RQ-11 (RAVEN)

Item Number / Title [DODIC]: A00010 / RQ-11 (RAVEN)

### Cost Elements (Units in Each)

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<th>O/M</th>
<th>C/R</th>
<th>FY</th>
<th>SERVICE</th>
<th>PROC</th>
<th>QTY</th>
<th>ACCEPT PRIOR TO 1 OCT 2018</th>
<th>BAL DUE AS OF 1 OCT</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Calendar Year 2019</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fiscal Year 2020</td>
<td>Calendar Year 2020</td>
</tr>
</tbody>
</table>

**Short Range Reconnaissance (SRR) Air Vehicles**

<table>
<thead>
<tr>
<th>Year</th>
<th>Service</th>
<th>Quantity (Units)</th>
<th>Budget Year</th>
<th>Fiscal Year 2019</th>
<th>Calendar Year 2019</th>
<th>Fiscal Year 2020</th>
<th>Calendar Year 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>ARMY</td>
<td>258</td>
<td>2019</td>
<td>258</td>
<td>A</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>2020</td>
<td>ARMY</td>
<td>475</td>
<td>2020</td>
<td>475</td>
<td>A</td>
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<td>40</td>
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</table>

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LI 9675A00010 - RQ-11 (RAVEN)

Army

Page 6 of 8

P-1 Line #4

Date: March 2019
Exhibit P-21, Production Schedule: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 10

P-1 Line Item Number / Title: 9675A00010 / RQ-11 (RAVEN)

Item Number / Title [DODIC]: A00010 / RQ-11 (RAVEN)

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<th>Fiscal Year 2021</th>
<th>Calendar Year 2021</th>
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<th>Calendar Year 2022</th>
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<tr>
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<td>M</td>
<td>C</td>
<td>R</td>
</tr>
<tr>
<td>O</td>
<td>M</td>
<td>C</td>
<td>R</td>
</tr>
<tr>
<td>O</td>
<td>M</td>
<td>C</td>
<td>R</td>
</tr>
</tbody>
</table>

Short Range Reconnaissance (SRR) Air Vehicles

| 1 | 2019 | ARMY | 258 | 258 | 0 |
| 1 | 2020 | ARMY | 475 | 80  | 395 |

Date: March 2019
Exhibit P-21, Production Schedule: PB 2020 Army  

Appropriation / Budget Activity / Budget Sub Activity:  
2031A / 01 / 10

P-1 Line Item Number / Title:  
9675A00010 / RQ-11 (RAVEN)

Item Number / Title [DODIC]:  
A00010 / RQ-11 (RAVEN)

**UNCLASSIFIED**

**Exhibit P-21, Production Schedule: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 10

**P-1 Line Item Number / Title:**
9675A00010 / RQ-11 (RAVEN)

**Item Number / Title [DODIC]:**
A00010 / RQ-11 (RAVEN)

**Production Rates (Each / Month):**

<table>
<thead>
<tr>
<th>MFR Ref</th>
<th>Manufacturer Name - Location</th>
<th>MSR For 2020</th>
<th>1-8-5 For 2020</th>
<th>MAX For 2020</th>
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<tbody>
<tr>
<td>1</td>
<td>TBD: Competitive - TBD</td>
<td>30</td>
<td>60</td>
<td>80</td>
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</table>

**Initial Procurement Leadtime (Months):**

<table>
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<th>Initial</th>
<th>Manufacturing PLT</th>
<th>Total After Oct 1</th>
<th>ALT Prior to Oct 1</th>
<th>ALT After Oct 1</th>
<th>ALT Prior to Oct 1</th>
<th>ALT After Oct 1</th>
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<td></td>
<td></td>
<td></td>
<td>3</td>
<td>4</td>
<td>6</td>
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</table>

**Reorder Procurement Leadtime (Months):**

<table>
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<th>Reorder</th>
<th>Manufacturing PLT</th>
<th>Total After Oct 1</th>
<th>ALT Prior to Oct 1</th>
<th>ALT After Oct 1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total After Oct 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
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</table>

*A* in the Delivery Schedule indicates the Contract Award Date.

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999, all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title: 0013A01310 / Tactical Unmanned Aircraft System (TUAS)

Resource Summary

<table>
<thead>
<tr>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
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<tbody>
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<td>Procurement Quantity (Units in Each)</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>12.100</td>
<td>-</td>
<td>12.100</td>
<td>1.101</td>
<td>25.345</td>
<td>38.100</td>
<td>55.400</td>
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<td>132.046</td>
</tr>
<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<td>-</td>
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<td>-</td>
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<tr>
<td>Net Procurement (P-R) ($ in Millions)</td>
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<td>12.100</td>
<td>-</td>
<td>12.100</td>
<td>1.101</td>
<td>25.345</td>
<td>38.100</td>
<td>55.400</td>
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<td>132.046</td>
</tr>
<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>12.100</td>
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<td>12.100</td>
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<td>25.345</td>
<td>38.100</td>
<td>55.400</td>
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<td>132.046</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
Flyway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |

Description:

This Budget Line Item is a New Start program in FY2020.

The Future Unmanned Aircraft System (FUAS) is a critical system in the multi-domain battle concept that will employ cross-domain capabilities at all echelons and allow ground based forces to project power from land into other domains to defeat highly capable enemies, secure terrain, and consolidate gains. FUAS encompasses an array of capabilities from platoon soldiers to Division Commanders.

The Future Vertical Lift (FVL) Cross Functional Team (CFT) is overseeing a demonstration effort in FY2019 and FY2020 that will inform the Future Tactical Unmanned Aircraft System (FTUAS) requirement to develop capability that will ultimately replace the RQ-7B Shadow TUAS within the Brigade Combat Team (BCT) formation. Demonstration effort will focus on conducting analysis and obtaining field data that will be used to write the Capabilities Development Document that will serve as the formal requirement to replace the RQ-7B within the BCTs. As part of the program development, a Materiel Development Decision will be conducted in FY2021 followed by a decision that will identify the appropriate entry into the Milestone Decision process.

To fully enable these desired cross-domain capabilities, FTUAS will leverage universal and scalable control interfaces and plug-and-play, advanced payloads to optimize manned-unmanned teaming for air and ground maneuver units across all environments. These systems will employ multi-domain capabilities increasing the Army’s ability to generate overmatch, provide the ground commander with multiple options, and enable joint force freedom of maneuver. Key attributes of the FTUAS include: (1) Reach: Expeditionary maneuver and mobility through increased speed, range, endurance, and payload capacity; (2) Protection: The capability and capacity to operate across a wider depth and breadth of domains, including high threat and denied environments, with assured communications, navigation, and reduced visual, electronic, and audio signatures able to overcome enemy countermeasures in high threat, anti-access and area denial (A2AD) environments; and (3) Lethality: A broad range of sensors and cross-domain fires that increase the speed of detecting, acquiring, identifying, and prioritizing targets to suppress, neutralize, and destroy enemy forces.

FTUAS will consist of an aircraft system that will include the airframe, propulsion, avionics, communications, navigation, and software systems; aircraft-specific ground support equipment including take-off and landing systems, power generation, transportation, or unique command and control equipment; aircraft software; and required engineering, logistics, and programmatic support.

Secondary Distribution

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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

**P-1 Line Item Number / Title:**
0013A01310 / Tactical Unmanned Aircraft System (TUAS)

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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

**Justification:**

FY2020 base procurement dollars in the amount of $12.1 million supports the FVL CFT TUAS demonstration: Specifically, the procurement of 12 attrition air vehicles, New Equipment Training (NET) and PM support.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 20

**P-1 Line Item Number / Title:** 0013A01310 / Tactical Unmanned Aircraft System (TUAS)

**Item Number / Title [DODIC]:** A01311 / Future Tactical Unmanned Aircraft System (TUAS)

**ID Code (A=Service Ready, B=Not Service Ready):**

**MDAP/MAIS Code:**

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<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
<tr>
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<td>-</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
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<tr>
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<td>Net Procurement (P-1) ($ in Millions)</td>
<td>-</td>
<td>-</td>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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<tr>
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</tbody>
</table>

**(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)**

| Initial Spares ($ in Millions) | -           | -       | -       | -             | -            | -             |
| Gross/Weapon System Unit Cost ($ in Thousands) | -           | -       | -       | -             | -            | -             |

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<td>Non Recurring Cost</td>
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<sup>1</sup> Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
0013A01310 / Tactical Unmanned Aircraft System (TUAS)

**Item Number / Title [DODIC]:**
A01311 / Future Tactical Unmanned Aircraft System (TUAS)

#### ID Code (A=Service Ready, B=Not Service Ready):

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<th>ID Code</th>
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(*†*) indicates the presence of a P-5a
**Exhibit P-5a, Procurement History and Planning:** PB 2020 Army  

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 01 / 20

**P-1 Line Item Number / Title:**  
0013A01310 / Tactical Unmanned Aircraft System (TUAS)

**Item Number / Title [DODIC]:**  
A01311 / Future Tactical Unmanned Aircraft System (TUAS)

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<th>Location of PCO</th>
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<th>Date of First Delivery</th>
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<th>Unit Cost ($K)</th>
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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

**P-1 Line Item Number / Title:**
3167A09999 / Spectrum Army Video

**ID Code** (A=Service Ready, B=Not Service Ready):

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<th>Program Elements for Code B Items</th>
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| Other Related Program Elements | N/A |

| Line Item MDAP/MAIS Code | N/A |

**Resource Summary**

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<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tr>
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<td>8.029</td>
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<td>-</td>
<td>8.029</td>
</tr>
</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

| Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |

**Description:**
The Commercial Spectrum Enhancement Act (CSEA) Title II, Public Law 108-494, dated December 23, 2004, established the Spectrum Relocation Fund (SRF) to provide Federal agencies a mechanism to recover the costs associated with relocating communication systems from spectrum bands which were auctioned for commercial purposes.

- The SRF is funded with proceeds from Federal Communications Commission (FCC) conducted auctions of spectrum licenses.
- SRF funds have an indefinite obligation period and remain available until expended (X Year).
- The Department of Defense (DoD) Information Officer (CIO) executes oversight of the DoD spectrum relocation and sharing efforts.

**Secondary Distribution**

<table>
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<tr>
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</tbody>
</table>

**Justification:**
The Tactical-Video (TAC-V) Downlink system is an integral component of the Security and Support (S&S) mission set of capabilities. The system consists of the video transmitter and antenna suite which are mounted on the UH-72 Lakota aircraft, the ground-based receiver antenna array, and a ground operator handheld receiver/display device for dismounted operations.

The systems allows the platform to transmit streaming video to the operator on the ground that receives, records, displays, and can play back real-time full motion video imagery and moving map metadata. This system is utilized in the support of state and federal law enforcement agencies, emergency first responders, and border patrol and customs agencies and as such, it is vital that this capability remain available to those agencies.
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
4742A05001 / Helicopter, Light Utility (LUH)

Date: March 2019

Description:
The UH-72A platform will provide the flexibility to respond to Homeland Security (HLS) requirements, conduct civil search and rescue operations, support damage assessment, support test and training centers, perform generating force missions, augment the HH-60 Medical Evacuation (MEDEVAC) aircraft, and provide support to CONUS counterdrug operations. The UH-72A will conduct general support utility helicopter missions and execute tasks as part of an integrated effort with other joint services, government agencies, and non-governmental organizations. The UH-72A provides time-sensitive transport of supplies or key personnel, air mobility to assist civil authorities through the execution of search and rescue or disaster relief operations, advanced warning/detection of external threats to include threats to our borders, augmentation of air ambulance capabilities, and limited command and control operations in the conduct of HLS. As part of the Aviation Restructure Initiative (ARI) the UH-72A became the primary training aircraft at the US Army Aviation Center of Excellence (USAACE) in Ft Rucker. The UH-72A program is currently in full rate production.

Justification:
-- FY20 has no Base production dollars
-- FY19 $34 million via Congressional funding supports procurement of 4 UH-72A Lakota aircraft.
-- FY18 base procurement dollars in the amount of $198.383 million supports procurement of 23 UH-72A Lakota aircraft, fielding, and program management for one year. $90 million of the $198.383 million arrived via Congressional funding and supports procurement of 11 UH-72A Lakota aircraft.

-- Of the "Prior years" quantity,
16 of the FY16 aircraft buy were delivered in FY17-FY18,
23 of the FY17 aircraft buy will be delivered in FY18-FY19,
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

P-1 Line Item Number / Title: 4742A05001 / Helicopter, Light Utility (LUH)

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Date: March 2019

23 of the FY18 aircraft buy will be delivered in FY19-FY21, and
4 of the FY19 aircraft buy will be delivered in FY21.

-- Current Army Acquisition Objective is 478 aircraft and the current Army Procurement Objective is 473 aircraft.
-- Total procurement quantity of 472 includes Puerto Rico attrited aircraft. Two High-Altitude Army National Guard Aviation Training Site aircraft procured with National Guard Bureau funding are not included in total quantity.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
### Resource Summary

<table>
<thead>
<tr>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<td>962.446</td>
<td>706.243</td>
<td>799.500</td>
<td>806.301</td>
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</table>

### Description:

AH-64E Reman is a complete remanufacture using a new airframe and meets all the requirements for Army and Joint interoperability goals for the future and adds significant combat capability while addressing obsolescence issues, ensuring the aircraft remains a viable combat multiplier beyond its lifecycle. The Army's only heavy attack helicopter, the AH-64E is fully digital with the latest technologies, adding significant combat capability to the aircraft. The AH-64E Apache is implementing an incremental design and fielding strategy as noted in the approved Capability Production Document (CPD). AH-64E Capability Version 1 includes Improved Drive and Propulsion System, Composite Main Rotor Blades (CMRB), Unmanned Aircraft System (UAS) Level III-IV Control, Improved Communications Suite, Improved Electronics / Modular Open Systems Approach, and Radar Electronics Unit (REU). Capability Version 4 includes Link 16, Air to Air to Ground (AAG) Video Relay, System Level Embedded Diagnostics (SLED), and provisions for Reduced-Size Crashworthy External Fuel Systems (RCEFS). Capability Version 6 includes Fire Control Radar (FCR) enhancements, Maritime Targeting Mode, Expanded Link-16, Image Blending, Multi-Mode Laser (MML), and Interactive Electronic Technical Manual (IETM) Upgrade. Production Lots 1-4 are Version 1 capable, Production Lots 5-8 are Version 4 capable, and Version 6 is planned for inclusion into the remaining Production Lots beginning with Production Lot 9. Upgrades are integrated as incremental block modifications. Other associated Government Furnished Equipment (GFE) such as the Modernized Radar Frequency Interferometer (M-RFI), Radar Electronics Unit (REU), and Manned/Unmanned Teaming Extended Capability (MUMT-X) will be procured and provided in accordance with the basis of issue plan. The program addresses operational shortfalls identified during real-world combat missions, meets Apache Capability Production Document (CPD) requirements for modernization, and provides necessary training, initial spares, and Peculiar Ground Support Equipment (PGSE). AH-64E aircraft entered the fleet in 2012.

"In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities."

### Secondary Distribution

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### Program Elements for Code B Items

- N/A
- N/A
- N/A
- N/A
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Justification:
FY20 Base procurement dollars in the amount of $997.719 millions supports Advance Procurement (AP), Full Rate Production (FRP) of AH-64E Apache Reman aircraft and associated support. This program was restructured in 2010 from the single AH-64E Apache (A05111) into two separate programs, AH-64E Apache Reman (A05111) and AH-64E Apache New Build (A05133).

The Apache Reman Program assumes a cost sharing with the New Build Program in accordance with the New Build Army Program Baseline (APB).

The current AH-64E Apache Remanufacture and New Build Army Procurement Objective (APO) is 791 Aircraft. The total AH-64E (Remanufacture and New Build) Army Acquisition Objective (AAO) is 812 Aircraft.

The Apache Reman Program quantities and associated funding include a Multi-year contract from FY17- FY21 and assumes approval for a subsequent Multi-year contract in FY22 through FY26. The Apache Reman and New Build Programs are planning continued production of aircraft through FY2027 to meet the Army Procurement Objective (APO).

Currently the total lead time (time from when first materials must be committed to aircraft delivery) is in excess of 24 months. The Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) utilized 18% to 22% for Advance Procurement (AP). Each year's AP can be divided into 2 segments: 1) Government Furnished Equipment (GFE) such as engines, sensors and avionics and 2) Contractor Furnished Equipment (CFE). Material includes production components to support deliveries, provisioning material, pre-modification effort, and any potential termination liability costs. Long lead items include, but not limited to, such items as the Main Rotor Drive Shaft, Composite Main Rotor Blade, Improved Drive System, and Composite Stabilator IAW Financial Management Regulation (FMR) 7000.14-R.

The Economical Production Rate of 98 aircraft per year is the maximum capacity at Full Rate Production assuming a 1-8-5 shift. This requirement is driven primarily by the production rate associated with current fuselage tooling capabilities. In order to increase the 1-8-5 (single shift) production rate, additional tooling must be procured. Capacity can be expanded to 144 aircraft per year with additional investment.

Comments:
“In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.”

<table>
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<td>48 / 981,399</td>
<td>- / -</td>
<td>48 / 981,399</td>
</tr>
</tbody>
</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.
## UNCLASSIFIED

### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 20

**P-1 Line Item Number / Title:** 5757A05111 / AH-64 Apache Block IIIA Reman

**Item Number / Title [DODIC]:** A05111 / AH-64 Apache Block IIIA Reman

**ID Code** (A=Service Ready, B=Not Service Ready): 

**MDAP/MAIS Code:** 

### Resource Summary

<table>
<thead>
<tr>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
<td>292</td>
<td>48</td>
<td>48</td>
<td>48</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>6,020.653</td>
<td>919.576</td>
<td>924.158</td>
<td>981.399</td>
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<tr>
<td>Less FY Advance Procurement ($ in Millions)</td>
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<td>170.910</td>
<td>174.550</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>4,978.627</td>
<td>734.416</td>
<td>753.248</td>
<td>806.849</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
<td>1,227.186</td>
<td>170.910</td>
<td>174.550</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>6,205.813</td>
<td>905.326</td>
<td>927.798</td>
<td>997.719</td>
<td>997.719</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Initial Spares ($ in Millions)**

- - - - - -

**Gross/Weapon System Unit Cost ($ in Thousands)**


Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

<table>
<thead>
<tr>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
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<td>Qty (Each)</td>
<td>Total Cost ($M)</td>
<td>Process Unit Cost ($K)</td>
<td>Qty (Each)</td>
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<td><strong>Flyaway Cost</strong></td>
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<tr>
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<td>Subtotal: Flyaway Cost</td>
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### Secondary Distribution

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<tr>
<td>Total Obligation Authority</td>
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</table>

(1) indicates the presence of a P-5a

---

LI 5757A05111 - AH-64 Apache Block IIIA Reman

**UNCLASSIFIED**

Page 3 of 10

P-1 Line #8
<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>O C O</th>
<th>FY</th>
<th>Contractor and Location</th>
<th>Method/Type or Funding Vehicle</th>
<th>Location of PCO</th>
<th>Award Date</th>
<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($ K)</th>
<th>Specs Avail Now?</th>
<th>Date Revision Available</th>
<th>RFP Issue Date</th>
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<tbody>
<tr>
<td>CFE(1)</td>
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<td>SS / FPFI</td>
<td>AMCOM</td>
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(1) indicates the presence of a P-21

Remarks:
Major Contractor Furnished Equipment (CFE) cost drivers include, but not limited to, the Fuselage, Transmission, and Composite Main Rotor Blades. Major Government Furnished Equipment (GFE) includes engines, Embedded Global Positioning System Inertial Navigation Systems (EGIs), Radar Electronics Unit (REU), Modernized Target Acquisition Designation System (MTADS)/Pilot Night Vision System (PNVS) and Manned/Unmanned Teaming Extended Capability (MUMT-X). Other Cost includes Support Equipment, Peculiar Ground Support Equipment (PGSE), and Government Program Management Support.
## Exhibit P-21, Production Schedule

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5757A05111 / AH-64 Apache Block IIIA Reman

**Item Number / Title [DODIC]:**
A05111 / AH-64 Apache Block IIIA Reman

**Date:** March 2019

### Cost Elements

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<th>Fiscal Year 2015</th>
<th>Calendar Year 2015</th>
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<td><strong>R</strong></td>
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### Prior Years Deliveries: 88

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<th>QTY</th>
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<tbody>
<tr>
<td>2014</td>
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### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5757A05111 / AH-64 Apache Block IIIA Reman

**Item Number / Title [DODIC]:**
A05111 / AH-64 Apache Block IIIA Reman

**Date:** March 2019

<table>
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<th>Fiscal Year 2017</th>
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#### Prior Years Deliveries: 88

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<th>QTY</th>
<th>ACCEPT PRIOR TO 1 OCT</th>
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Prior Years Deliveries: 88
### Exhibit P-21, Production Schedule: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 01 / 20

#### P-1 Line Item Number / Title:
5757A05111 / AH-64 Apache Block IIIA Reman

#### Item Number / Title [DODIC]:
A05111 / AH-64 Apache Block IIIA Reman

#### Date:
March 2019

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<th>PROC</th>
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#### Cost Elements (Units in Each)

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<th>Fiscal Year 2021</th>
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Prior Years Deliveries: 88

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OC
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OL

### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5757A05111 / AH-64 Apache Block IIIA Reman

**Item Number / Title [DODIC]:**
A05111 / AH-64 Apache Block IIIA Reman

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**Cost Elements (Units in Each)**

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<th>SERVICE</th>
<th>PROC QTY</th>
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**Fiscal Year 2022**

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**Calendar Year 2022**

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**Fiscal Year 2023**

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**Prior Years Deliveries:** 88

- 2014 ARMY: 35 35 0
- 2015 ARMY: 53 53 0
- 2016 ARMY: 64 64 0
- 2018 ARMY: 48 48 0
- 2019 ARMY: 48 48 0
- 2020 ARMY: 48 25 23

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**Cost Elements (Units in Each)**

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**Exhibit P-21, Production Schedule:**

**Date:** March 2019

---

**UNCLASSIFIED**

**LI 5757A05111 - AH-64 Apache Block IIIA Reman**

**UNCLASSIFIED**

**Page 9 of 10**

**P-1 Line #8**
<table>
<thead>
<tr>
<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>Production Rates (Each / Month)</th>
<th>Procurement Leadtime (Months)</th>
<th>Reorder</th>
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</tbody>
</table>

*A" in the Delivery Schedule indicates the Contract Award Date.

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to than 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
UNCLASSIFIED

Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
5757A05111 / AH-64 Apache Block IIIA Reman

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tbody>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>1,227.186</td>
<td>170.910</td>
<td>174.550</td>
<td>190.870</td>
<td></td>
<td>-</td>
<td>190.870</td>
<td>169.460</td>
<td>192.230</td>
<td>169.218</td>
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</tr>
<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>1,227.186</td>
<td>170.910</td>
<td>174.550</td>
<td>190.870</td>
<td></td>
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<td>190.870</td>
<td>169.460</td>
<td>192.230</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>1,227.186</td>
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<td>190.870</td>
<td>169.460</td>
<td>192.230</td>
<td>169.218</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
AH-64E Reman is a complete remanufacture using a new airframe and meets all the requirements for Army and Joint interoperability goals for the future and adds significant combat capability while addressing obsolescence issues, ensuring the aircraft remains a viable combat multiplier beyond its lifecycle. The Army’s only heavy attack helicopter, the AH-64E is fully digital with the latest technologies, adding significant combat capability to the aircraft. The AH-64E Apache is implementing an incremental design and fielding strategy as noted in the approved Capability Production Document (CPD). AH-64E Capability Version 1 includes Improved Drive and Propulsion System, Composite Main Rotor Blades (CMRB), Unmanned Aircraft System (UAS) Level III-IV Control, Improved Communications Suite, Improved Electronics / Modular Open Systems Approach, and Radar Electronics Unit (REU). Capability Version 4 includes Link 16, Air to Air to Ground (AAG) Video Relay, System Level Embedded Diagnostics (SLED), and provisions for Reduced-Size Crashworthy External Fuel Systems (RCEF). Capability Version 6 includes Fire Control Radar (FCR) enhancements, Maritime Targeting Mode, Expanded Link-16, Image Blending, Multi-Mode Laser (MML), and Interactive Electronic Technical Manual (IETM) Upgrade. Production Lots 1-4 are Version 1 capable, Production Lots 5-8 are Version 4 capable, and Version 6 is planned for inclusion into the remaining Production Lots beginning with Production Lot 9. Upgrades are integrated as incremental block modifications. Other associated Government Furnished Equipment (GFE) such as the, Modernized Radar Frequency Interferometer (M-RFI), Radar Electronics Unit (REU), and Manned/Unmanned Teaming Extended Capability (MUMT-X) will be procured and provided in accordance with the basis of issue plan. The program addresses operational shortfalls identified during real-world combat missions, meets Apache Capability Production Document (CPD) requirements for modernization, and provides necessary training, initial spares, and Peculiar Ground Support Equipment (PGSE). AH-64E aircraft entered the fleet in 2012.
Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army

P-1 Line Item Number / Title:
5757A05111 / AH-64 Apache Block IIIA Reman

Justification:
FY20 Base procurement dollars in the amount of $997.719 million supports Advance Procurement (AP), Full Rate Production (FRP) of AH-64E Apache Reman aircraft and associated support. This program was restructured in 2010 from the single AH-64E Apache (A05111) into two separate programs, AH-64E Apache Reman (A05111) and AH-64E Apache New Build (A05133).

The Apache Reman Program assumes a cost sharing with the New Build Program in accordance with the New Build APB.

The current AH-64E Apache Remanufacture and New Build Army Procurement Objective (APO) is 791 Aircraft. The total AH-64E (Remanufacture and New Build) Army Acquisition Objective (AAO) is 812 Aircraft.

The Apache Reman Program quantities and associated funding include a Multi-year contract from FY17- FY21 and assumes approval for a subsequent Multi-year contract in FY22 through FY26. The Apache Reman and New Build Programs are planning continued production of aircraft through FY2027 to meet the Army Procurement Objective (APO).

Currently the total lead time (time from when first materials must be committed to aircraft delivery) is in excess of 24 months. The Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) utilized 18% to 22% for Advance Procurement (AP). Each year's AP can be divided into 2 segments: 1) Government Furnished Equipment (GFE) such as engines, sensors and avionics and 2) Contractor Furnished Equipment (CFE). Material includes production components to support deliveries, provisioning material, pre-modification effort, and any potential termination liability costs. Long lead items include, but not limited to, such items as the Main Rotor Drive Shaft, Composite Main Rotor Blade, Improved Drive System, and Composite Stabilator IAW Financial Management Regulation (FMR) 7000.14-R.

The Economical Production Rate of 98 aircraft per year is the maximum capacity at Full Rate Production assuming a 1-8-5 shift. This requirement is driven primarily by the production rate associated with current fuselage tooling capabilities. In order to increase the 1-8-5 (single shift) production rate, additional tooling must be procured. Capacity can be expanded to 144 aircraft per year with additional investment.

Comments:
"In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities."
### Exhibit P-10, Advance Procurement Requirements Analysis (page 1 - Budget Funding Justification)

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5757A05111 / AH-64 Apache Block IIIA Reman

**P-5 Number / Title:**
A05111 / AH-64 Apache Block IIIA Reman

**Date:** March 2019

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<th>First System (2020) Completion Date:</th>
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<th>FY 2019 ($ M)</th>
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<td><strong>170.910</strong></td>
<td><strong>174.550</strong></td>
<td><strong>190.870</strong></td>
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</table>

**Total Advance Procurement/Obligation Authority**: 1,227.186

UNCLASSIFIED
Exhibit P-10, Advance Procurement Requirements Analysis (page 2 - Budget Funding Justification): PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5757A05111 / AH-64 Apache Block IIIA Reman

**P-5 Number / Title:**
A05111 / AH-64 Apache Block IIIA Reman

### FY 2020

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<th>For FY</th>
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<td>190.870</td>
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<td>Total Advance Procurement/Obligation Authority</td>
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<td>190.870</td>
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</table>

**Description:**
Currently the total lead time (time from when first materials must be committed to aircraft delivery) is in excess of 24 months. The Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) utilized 18% to 22% for Advance Procurement (AP) for single year contracts. Each year’s AP can be divided into 2 segments: 1) Government Furnished Equipment (GFE) such as engines, sensors and avionics and 2) Contractor Furnished Equipment (CFE). Material includes production components to support deliveries, provisioning material, pre-modification effort, and any potential termination liability costs. Long lead items include the Main Rotor Drive Shaft, Composite Main Rotor Blade, Improved Drive System, and Composite Stabilator.
## Description:

The AH-64E Apache New Build aircraft is the same configuration as the AH-64E Remanufacture aircraft and procured using the same contracts. While the AH-64E Remanufacture program inducts aging AH-64D aircraft into a remanufacture production line, the AH-64E New Build program assembles all new components resulting in completely new aircraft at the end of the production process. These aircraft are procured at a significantly higher cost because they include all new components. A new build Modernized Target Acquisition Designation Sight / Pilot Night Vision Sensor (MTADS/PNVS) system will be procured and provided with each aircraft. Other associated Government Furnished Equipment (GFE) such as the Fire Control Radar (FCR), Modernized Radar Frequency Interferometer (M-RFI), Radar Electronics Unit (REU), and Manned/Unmanned Teaming Extended Capability (MUMT-X) will be procured and provided in accordance with the basis of issue plan.

## Resource Summary

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<td>Continuing</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>810.929</td>
<td>1,023.200</td>
<td>524.587</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>Continuing</td>
<td>Continuing</td>
</tr>
<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>726.422</td>
<td>951.400</td>
<td>452.687</td>
<td>0.000</td>
<td>-</td>
<td>0.000</td>
<td>0.000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Continuing</td>
<td>Continuing</td>
</tr>
<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
<td>156.307</td>
<td>71.900</td>
<td>58.600</td>
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<td>-</td>
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<td>-</td>
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<tr>
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</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

| Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands)| 33.600 | 32.310 | 27.810 | 21.990 | - | 21.990 | 34.120 | - | - | - | Continuing  | Continuing|
| Gross/Weapon System Unit Cost ($ in Thousands)| 32,437.160 | 33,006.452 | 29,143.722 | - | - | - | - | - | - | - | Continuing  | Continuing|

## Secondary Distribution

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<tr>
<td>Total Obligation Authority</td>
<td>1,023.300</td>
<td>511.287</td>
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<tr>
<td>Total Obligation Authority</td>
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<td>511.287</td>
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</table>
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
5840A05133 / AH-64 Apache Block IIIB New Build

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Date: March 2019

Justification:
This program was restructured in 2010 from the single AH-64E Apache (A05111) into two separate programs, AH-64E Apache Reman (A05111) and AH-64E Apache New Build (A05133).

The current AH-64E Apache Remanufacture and New Build Army Procurement Objective (APO) is 791 Aircraft. The total AH-64E (Remanufacture and New Build) Army Acquisition Objective (AAO) is 812 Aircraft.

Additionally, the New Build program prior year funding includes Congressionally appropriated Overseas Contingency Operations (OCO) funding to procure New Build aircraft to fill aircraft shortages due to combat attrition and training loss. OCO funding does not provide advance procurement for long lead items for these aircraft.

<table>
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<tr>
<th>Exhibit Type</th>
<th>Title*</th>
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<th>Quantity / Total Cost (Each) / ($ M)</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
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<td>A05133 / AH-64 Apache Block IIIB New Build</td>
<td>P-5a, P-21</td>
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<td>Total Gross/Weapon System Cost</td>
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<td>- / -</td>
<td>58.600</td>
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</tbody>
</table>

Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.
## Resource Summary

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<th>Resource Summary</th>
<th>Prior Years</th>
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<th>FY 2019</th>
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<td>1,023.300</td>
<td>511.287</td>
<td>0.000</td>
<td>-</td>
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</tbody>
</table>

### Notation

- **(†)**: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Initial Spares

| Initial Spares ($ in Millions) | - | - | - | - | - | - |

### Gross/Weapon System Unit Cost ($ in Thousands)

| Gross/Weapon System Unit Cost | 32,437.160 | 33,006.452 | 29,143.722 | - | - | - |

### Note

- The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.

---

## Cost Elements

### FY 2018

- **Flyaway Cost**
  - **Recruising Cost**
    - CFE\(^{(†)}\): 22,312.840 25 557.821 20,401.387 31 632.443 18 299.201 - - 58.600 - - - - - 58.600
    - GFE: 6,998.080 25 174.952 11,066.548 31 343.063 18 196.827 - - - - - - - - - -
    - Other Costs: - - 66.527 - - 37.570 - - 22.572 - - - - - - - - - -
    - Initial Spares: - - 2.629 - - 10.124 - - 5.987 - - - - - - - - - -
    - Subtotal: Recurring Cost: - - 800.929 - - 1,023.200 - - 524.587 - - 58.600 - - - - - - 58.600
  - **Non Recurring Cost**
    - - - 10.000 - - - - - - - - - - - - - - - -
  - **Subtotal Non Recurring Cost:**
    - - - - - - - - - - - - - - - - - - - - - - - -
  - **Subtotal: Flyaway Cost**
    - - - 810.929 - - 1,023.200 - - 524.587 - - 58.600 - - - - - - 58.600
- **Gross/Weapon System Cost**
  - 32,437.160 25 810.929 33,006.452 31 1,023.200 29,143.722 18 524.587 - 0 58.600 - - - - - 0 58.600

### FY 2019

- **Flyaway Cost**
- **Non Recurring Cost**
- **Subtotal Non Recurring Cost**
- **Subtotal: Flyaway Cost**
- **Gross/Weapon System Cost**

### FY 2020

- **Flyaway Cost**
- **Non Recurring Cost**
- **Subtotal Non Recurring Cost**
- **Subtotal: Flyaway Cost**
- **Gross/Weapon System Cost**

### Secondary Distribution

**Army**

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**Total Obligation Authority**

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<th>FY 2020 OCO</th>
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**UNCLASSIFIED**

LI 5840A05133 - AH-64 Apache Block IIIB New Build

UNCLASSIFIED

Page 3 of 11

P-1 Line #10
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<td>511.287</td>
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<td>-</td>
<td>0.000</td>
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† indicates the presence of a P-5a
Exhibit P-5a, Procurement History and Planning: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 20

P-1 Line Item Number / Title: 5840A05133 / AH-64 Apache Block IIIB New Build

Item Number / Title [DODIC]: A05133 / AH-64 Apache Block IIIB New Build

<table>
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<th>Cost Elements</th>
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<th>Contractor and Location</th>
<th>Method/Type or Funding Vehicle</th>
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<th>Unit Cost ($K)</th>
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<th>Date Revision Available</th>
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(†) indicates the presence of a P-21

Remarks:
Major Contractor Furnished Equipment (CFE) cost drivers include the Fuselage, Transmission, and Composite Main Rotor Blades. Government Furnished Equipment (GFE) includes engines, Embedded Global Positioning System Inertial Navigation Systems (EGIs), Radar Electronics Unit (REU), Modernized Target Acquisition Designation System (MTADS)/Pilot Night Vision System (PNVS) and Manned/Unmanned Teaming Extended Capability (MUMT-X). Other Cost includes Support Equipment, Peculiar Ground Support (PGSE), and Government Program Management Support.
UNCLASSIFIED
Date: March 2019

Exhibit P-21, Production Schedule: PB 2020 Army
P-1 Line Item Number / Title:
5840A05133 / AH-64 Apache Block IIIB New Build

Appropriation / Budget Activity / Budget Sub Activity:
2031A / 01 / 20
Cost Elements
(Units in Each)

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Item Number / Title [DODIC]:
A05133 / AH-64 Apache Block IIIB New
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Page 6 of 11

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### Budget Activity / Budget Sub Activity:

- **Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 20
- **P-1 Line Item Number / Title:** 5840A05133 / AH-64 Apache Block IIIB New Build
- **Item Number / Title [DODIC]:** A05133 / AH-64 Apache Block IIIB New Build

### Production Schedule:

- **Exhibit P-21, Production Schedule:** PB 2020 Army
- **Date:** March 2019

### Cost Elements

- **Cost Elements:**
  - **Fiscal Year 2018:**
    - **Calendar Year 2018:**
      - **Fiscal Year 2019:**
        - **Calendar Year 2019:**
          - **CFE**
### Exhibit P-21, Production Schedule

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
5840A05133 / AH-64 Apache Block IIIB New Build

**Item Number / Title [DODIC]:**
A05133 / AH-64 Apache Block IIIB New Build

**UNCLASSIFIED**

**Date:** March 2019

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#### Cost Elements (Units in Each)

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**Exhibit P-21, Production Schedule: PB 2020 Army**

**P-1 Line Item Number / Title:**
5840A05133 / AH-64 Apache Block IIIB New Build

**Item Number / Title [DODIC]:**
A05133 / AH-64 Apache Block IIIB New Build

**UNCLASSIFIED**

**Date:** March 2019

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#### Cost Elements (Units in Each)

<table>
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**Fiscal Year 2020**

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**Fiscal Year 2021**

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**Exhibit P-21, Production Schedule: PB 2020 Army**

**P-1 Line Item Number / Title:**
5840A05133 / AH-64 Apache Block IIIB New Build

**Item Number / Title [DODIC]:**
A05133 / AH-64 Apache Block IIIB New Build

**UNCLASSIFIED**

**Date:** March 2019

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#### Cost Elements (Units in Each)

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**Fiscal Year 2020**

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**Exhibit P-21, Production Schedule: PB 2020 Army**

**P-1 Line Item Number / Title:**
5840A05133 / AH-64 Apache Block IIIB New Build

**Item Number / Title [DODIC]:**
A05133 / AH-64 Apache Block IIIB New Build

**UNCLASSIFIED**

**Date:** March 2019

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#### Cost Elements (Units in Each)

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**Fiscal Year 2021**

<table>
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### Cost Elements

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<th>Qty</th>
<th>PROC</th>
<th>QTY</th>
<th>ACCEPT PRIOR TO 1 OCT</th>
<th>BAL DUE AS OF 1 OCT</th>
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<tr>
<td>CFE</td>
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<td>2</td>
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<td>3</td>
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<tr>
<td>CFE</td>
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<td>16</td>
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<td>18</td>
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</table>
### Production Rates (Each / Year)

<table>
<thead>
<tr>
<th>Manufacturer Name - Location</th>
<th>MSR For 2020</th>
<th>1-8-5 For 2020</th>
<th>MAX For 2020</th>
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<tbody>
<tr>
<td>The Boeing Company - Mesa</td>
<td>48</td>
<td>98</td>
<td>144</td>
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### Procurement Leadtime (Months)

<table>
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<th>Initial</th>
<th>Reorder</th>
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<tr>
<td>Manufacturing PLT</td>
<td></td>
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<tr>
<td>ALT Prior to Oct 1</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>ALT After Oct 1</td>
<td>11</td>
<td>32</td>
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<tr>
<td>Total After Oct 1</td>
<td>32</td>
<td>43</td>
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<tr>
<td>ALT Prior to Oct 1</td>
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<td>6</td>
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<tr>
<td>ALT After Oct 1</td>
<td>32</td>
<td>38</td>
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</table>

**Remarks:**
The Economical Production Rate of 98 aircraft per year is the maximum capacity at Full Rate Production assuming a 1-8-5 shift. This requirement is driven primarily by the production rate associated with current fuselage tooling capabilities. In order to increase the 1-8-5 (single shift) production rate, additional tooling must be procured. The minimum rate of 48 aircraft per year is based upon Combined Remanufacture and New Build quantities.

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army  

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
5840A05133 / AH-64 Apache Block IIIB New Build

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>156.307</td>
<td>71.900</td>
<td>58.600</td>
<td>-</td>
<td>-</td>
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<td>Continuing</td>
<td>Continuing</td>
</tr>
<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>156.307</td>
<td>71.900</td>
<td>58.600</td>
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<td>-</td>
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<td>-</td>
<td>Continuing</td>
<td>Continuing</td>
</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>156.307</td>
<td>71.900</td>
<td>58.600</td>
<td>-</td>
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</table>

Description:
The AH-64E Apache New Build aircraft is the same configuration as the AH-64E Remanufacture aircraft and procured using the same contracts. While the AH-64E Remanufacture program inducts aging AH-64D aircraft into a remanufacture production line, the AH-64E New Build program assembles all new components resulting in completely new aircraft at the end of the production process. These aircraft are procured at a significantly higher cost because they include all new components. A new build Modernized Target Acquisition Designation Sight / Pilot Night Vision Sensor (MTADS/PNVS) system will be procured and provided with each aircraft. Other associated Government Furnished Equipment (GFE) such as the Fire Control Radar (FCR), Modernized Radar Frequency Interferometer (M-RFI), Radar Electronics Unit (REU), and Manned/Unmanned Teaming Extended Capability (MUMT-X) will be procured and provided in accordance with the basis of issue plan.
**Exhibit P-40, Advance Procurement Budget Line Item Justification:** PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
- 2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

**P-1 Line Item Number / Title:**
- 5840A05133 / AH-64 Apache Block IIIB New Build

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

| Line Item MDAP/MAIS Code | N/A |

**Exhibits Schedule**

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<th>Title*</th>
<th>ID CD</th>
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<tr>
<td>P-10</td>
<td>A05133 / AH-64 Apache Block IIIB New Build</td>
<td>25 / 156.307</td>
<td>31 / 71.900</td>
</tr>
<tr>
<td>P-40</td>
<td>Total Gross/Weapon System Cost</td>
<td>18 / 58.600</td>
<td>0 / -</td>
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<table>
<thead>
<tr>
<th>Exhibition Schedule</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
</tr>
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<td>Quantity / Total Cost (Each) / ($ M)</td>
<td>Quantity / Total Cost (Each) / ($ M)</td>
<td>Quantity / Total Cost (Each) / ($ M)</td>
<td>Quantity / Total Cost (Each) / ($ M)</td>
<td>Quantity / Total Cost (Each) / ($ M)</td>
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<td>- / -</td>
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<td>P-40</td>
<td>25 / 156.307</td>
<td>31 / 71.900</td>
<td>18 / 58.600</td>
<td>0 / -</td>
<td>- / -</td>
<td>0 / -</td>
</tr>
</tbody>
</table>

*Title represents the P-10 Title for Advance Procurement.

**Note:** Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**
The New Build program prior year funding includes Congressionally appropriated Overseas Contingency Operations (OCO) funding to procure New Build aircraft to fill aircraft shortages due to combat attrition and training loss. OCO funding does not provide advance procurement for long lead items for these aircraft.
<table>
<thead>
<tr>
<th><strong>UNCLASSIFIED</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Exhibit P-10, Advance Procurement Requirements Analysis</strong> <em>(page 1 - Budget Funding Justification)</em>: PB 2020 Army</td>
</tr>
<tr>
<td><strong>Date:</strong> March 2019</td>
</tr>
<tr>
<td><strong>Appropriation / Budget Activity / Budget Sub Activity:</strong> 2031A / 01 / 20</td>
</tr>
<tr>
<td><strong>P-1 Line Item Number / Title:</strong> 5840A05133 / AH-64 Apache Block IIIB New Build</td>
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<tr>
<td><strong>P-5 Number / Title:</strong> A05133 / AH-64 Apache Block IIIB New Build</td>
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<table>
<thead>
<tr>
<th><strong>First System (2020) Award Date:</strong> July 2009</th>
<th><strong>First System (2020) Completion Date:</strong> November 2011</th>
<th><strong>Interval Between Systems:</strong> 1 Months</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th><strong>AH-64 Apache Block IIIB New Build</strong></th>
<th><strong>Production Leadtime</strong> (Months)</th>
<th><strong>Prior Years</strong> (Each)</th>
<th><strong>FY 2018</strong> (Each)</th>
<th><strong>FY 2019</strong> (Each)</th>
<th><strong>FY 2020</strong> (Each)</th>
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<tbody>
<tr>
<td><strong>Quantity</strong></td>
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<td><strong>25</strong></td>
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<td><strong>31</strong></td>
<td><strong>18</strong></td>
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<table>
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<th><strong>Cost Elements</strong></th>
<th><strong>When Required</strong> (Months)</th>
<th><strong>Prior Years</strong> ($ M)</th>
<th><strong>FY 2018</strong> ($ M)</th>
<th><strong>FY 2019</strong> ($ M)</th>
<th><strong>FY 2020</strong> ($ M)</th>
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<tr>
<td><strong>AH-64E Apache New Build</strong></td>
<td>12</td>
<td><strong>156.307</strong></td>
<td><strong>71.900</strong></td>
<td><strong>58.600</strong></td>
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</tr>
</tbody>
</table>

| **Total: Other** |                                  | **156.307**          | **71.900**       | **58.600**       | -                |

| **Total Advance Procurement/Obligation Authority** | **156.307** | **71.900** | **58.600** |

**Total Advance Procurement/Obligation Authority:** 156.307

**Total:** 156.307

**Total:** 71.900

**Total:** 58.600
### FY 2020

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>QPA (Each)</th>
<th>Production Leadtime (Months)</th>
<th>Unit Cost ($K)</th>
<th>Contract Forecast Date</th>
<th>2020 Qty (Each)</th>
<th>For FY Total Cost Request ($M)</th>
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<tr>
<td><strong>Other</strong></td>
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<td>AH-64E Apache New Build</td>
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<tr>
<td><strong>Total: Other</strong></td>
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<tr>
<td>Total Advance Procurement/Obligation Authority</td>
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</tbody>
</table>

**Description:**
Currently the total lead time (time from when first materials must be committed to aircraft delivery) is in excess of 24 months. The Cost Assessment and Program Evaluation (CAPE) Independent Cost Estimate (ICE) utilized 18% to 22% for Advance Procurement (AP) for single year contracts. Each year's AP can be divided into 2 segments: 1) Government Furnished Equipment (GFE) such as engines, sensors and avionics and 2) Contractor Furnished Equipment (CFE). Material includes production components to support deliveries, provisioning material, pre-modification effort, and any potential termination liability costs. Long lead items include the Main Rotor Drive Shaft, Composite Main Rotor Blade, Improved Drive System, and Composite Stabilator.
**Resource Summary**

<table>
<thead>
<tr>
<th>Procurement Quantity (Units in Each)</th>
<th>Prior</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tr>
<td>934</td>
<td>57</td>
<td>58</td>
<td>73</td>
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<td>73</td>
<td>36</td>
<td>24</td>
<td>33</td>
<td>28</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
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<td>1,254,529</td>
<td>1,239,408</td>
<td>1,523,103</td>
<td>-</td>
<td>1,523,103</td>
<td>826,318</td>
<td>712,255</td>
<td>853,706</td>
<td>783,018</td>
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<td>111,563</td>
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<td>68,147</td>
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<td>146,068</td>
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**Gross/Weapon System Cost ($ in Millions)**

| Description: |
| The UH-60M Black Hawk Helicopter serves as the Army's utility helicopter for the near and midterm force and is in line with the Army's Modernization Strategy, the National Military Strategy, and the National Defense Strategy. The UH-60M Black Hawk is a digital networked platform with greater range and lift to support maneuver Commanders through air assault, general support command and control, and aeromedical evacuation. Full rate production for this new build helicopter began in 2007. The current UH-60 Army Acquisition Objective (AAO) is 2,135 which will be obtained by procuring a combination 1375 UH-60M and 760 UH-60L to UH-60V conversion models. The UH-60M Black Hawk, with the integrated Medical Evacuation (MEDEVAC) Mission Equipment Package (MEP) kit, provides day/night and adverse weather emergency evacuation of casualties. The integration of the MEDEVAC MEP into the UH-60M changes the nomenclature to HH-60M. |
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Approval / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
6771AA0005 / UH-60 Blackhawk M Model (MYP)

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule

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<th>Subexhibits</th>
<th>ID CD</th>
<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
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</thead>
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<tr>
<td>P-5</td>
<td>A05002 / UH-60 BLACK HAWK (MYP)</td>
<td>934 / 16,207,866</td>
<td>57 / 1,254,529</td>
<td>58 / 1,239,408</td>
<td>73 / 1,523,103</td>
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<td>73 / 1,523,103</td>
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<td>57 / 1,254,529</td>
<td>58 / 1,239,408</td>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Base procurement dollars in the amount of $1491.112 million supports procurement of 73 aircraft (58 UH-60M and 15 HH-60M).

Note: The FY 2018 total obligation authority should be shown as $1,181.325 million and supports procurement of 57 aircraft (42 UH-60M and 15 HH-60M).

Note: The multi-year 9 contract versus 5 single year contracts for FY 2017 through FY 2021 is projected to yield a 15.4% cost avoidance ($638.292 million).

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.

Two additional aircraft in FY15 and three additional aircraft in FY16 were procured as a result of the Black Hawk Exchange and Sales Team (BEST) program. This program avoids demilitarization and divestment cost and applies proceeds from the divestiture of non-excess obsolete H-60 aircraft towards the procurement of replacement H-60M aircraft in accordance with 40 U.S.C. 503 and AR725-1 as approved by the Army Acquisition Executive (AAE).

Four UH-60M aircraft were procured utilizing proceeds from the BEST program reprogrammed to FY17 funding on the A05002 funding line.

One UH-60M aircraft will be procured utilizing proceeds from the BEST program reprogrammed to FY18 funding on the A05002 funding line.
### Resource Summary

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<td>Item Number / Title [DODIC]:</td>
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<td>6771AA0005 / UH-60 Blackhawk M Model (MYP)</td>
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</table>

#### Gross/Weapon System Unit Cost

- **Initial Spares** ($ in Millions): 17,353.176
- **Flyaway Cost** ($ in Millions):
  - 11,089.041
  - 21,369.103
  - 20,864.425

#### Prior Years

- **2018**
  - Gross/Weapon System Cost ($ in Millions): 16,207.866
  - Procurement Quantity (Units in Each): 2031A

#### FY 2020

- **2020 Base**
  - Gross/Weapon System Cost ($ in Millions): 16,381.973
  - Procurement Quantity (Units in Each): 2031A

- **OCO**
  - Gross/Weapon System Cost ($ in Millions): -

### Fiscal Year 2020

- **Total Obligation Authority** ($ in Millions): 1,876
  - **Cost Elements**:
    - **Support - Data Cost**
      - Technical Publications
        - Quantity (Each): 31,640
        - Unit Cost ($ K): 3.627
        - Total Cost ($ M): 3.801
    - **Fielding**
      - Unit Cost ($ K): 69.684

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
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<td>Unit Cost ($K)</td>
<td>Qty (Each)</td>
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<td>16,207.866</td>
<td>22,009.281</td>
<td>57</td>
<td>1,254,529</td>
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</table>

**Remarks:**

FY 2018 ECO includes Congressional Plus Up of $62 million.

FY 2020 Fielding increase accelerates divestment of H-60A helicopters from the Army inventory.

Core Civilian Manpower was moved to a separate Acquisition O&M funding line in FY 2019 reducing the Support - Program Management Cost requirement for A05002 UH-60 Black Hawk (MYP) funding line.

### Secondary Distribution

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Unclassified

Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary
P-1 Line Item Number / Title:
6771AA0005 / UH-60 Blackhawk M Model (MYP)

Program Elements for Code B Items: N/A
Other Related Program Elements: N/A
Line Item MDAP/MAIS Code: N/A

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<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tbody>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>4,099.212</td>
<td>86.295</td>
<td>106.150</td>
<td>79.572</td>
<td>-</td>
<td>79.572</td>
<td>87.427</td>
<td>146.068</td>
<td>68.147</td>
<td>92.494</td>
<td>Continuing</td>
<td>Continuing</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
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<td>-</td>
<td>79.572</td>
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<td>68.147</td>
<td>92.494</td>
<td>Continuing</td>
<td>Continuing</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
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<td>86.295</td>
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<td>87.427</td>
<td>146.068</td>
<td>68.147</td>
<td>92.494</td>
<td>Continuing</td>
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</table>

Description:
The Advance Procurement for the UH-60 Black Hawk contains funding for the airframe and engine contracts as well as funding for Government Furnished Equipment (GFE) to support the UH-60 aircraft and mission kit production. GFE (in addition to the engine) currently requiring advance procurement includes numerous communication, navigation, and Aircraft Survivability Equipment items procured by the Communications and Electronics Command (CECOM).
Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army
Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
6771AA0005 / UH-60 Blackhawk M Model (MYP)

Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

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Exhibit Type | Title* | ID CD | MDAP/MAIS Code | Prior Years | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total |
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<td>A05002 / UH-60 BLACK HAWK (MYP)</td>
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<td>57 / 86.295</td>
<td>58 / 106.150</td>
<td>73 / 79.572</td>
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*Title represents the P-10 Title for Advance Procurement.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
**Exhibit P-10, Advance Procurement Requirements Analysis (page 1 - Budget Funding Justification): PB 2020 Army**

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6771AA0005 / UH-60 Blackhawk M Model (MYP)

**P-5 Number / Title:**
A05002 / UH-60 BLACK HAWK (MYP)

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<th>Prior Years (Each)</th>
<th>FY 2018 (Each)</th>
<th>FY 2019 (Each)</th>
<th>FY 2020 (Each)</th>
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### FY 2020

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### Description:
N/A
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title: 6773A05009 / UH-60 Black Hawk L and V Models

Date: March 2019

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

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<th>Program Elements for Code B Items</th>
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**Resource Summary**

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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<th>FY 2023</th>
<th>FY 2024</th>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

| Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | 9,436.458 | 2,186.171 | 8,229.889 | 6,771.600 | - | 6,771.600 | 7,207.042 | 4,823.167 | 4,851.556 | 4,033.342 | - | 8,716.721 |

**Description:**

UH-60 A and L Models include UH-60 A to L conversions in FY16 through FY18 and UH-60L Digital, now designated as UH-60V. Production for UH-60V began in FY18. The UH-60 BLACKHAWK helicopter is the Army's utility helicopter for the near and midterm force. It is a twin engine, single rotor, four bladed utility helicopter used for air assault, general support, command & control, and aero-medical evacuations (MEDEVAC). The UH-60 is joint force capable, providing 24 hour/day support including operations at night and in adverse weather conditions. The UH-60 is designed to carry a crew of four plus eleven combat equipped troops or an external load up to 9,000 pounds. The UH-60 BLACK HAWK was fielded in 1978 as a replacement for the UH-1. From 1978 to 1988, UH-60As were produced. In 1989 production of UH-60Ls with improved engines and drive train began. In 2007, full rate production of UH-60Ms began which provided a digital cockpit, digital Flight Management System (FMS), improved engine, and wide-cord main rotor blades. The UH-60V provides an integrated digital map, integrated performance planning, common functionality and commonality of training with UH-60M.

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**Secondary Distribution**

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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

**P-1 Line Item Number / Title:**
6773A05009 / UH-60 Black Hawk L and V Models

**Date:** March 2019

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

---

### Exhibits Schedule

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<th>Title*</th>
<th>Subexhibits</th>
<th>ID / CD</th>
<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) (Each) / ($M)</th>
<th>FY 2018</th>
<th>FY 2019</th>
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### Exhibits Schedule

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<th>ID / CD</th>
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<th>FY 2023</th>
<th>FY 2024</th>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

**Note:** Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

---

**Justification:**

FY20 base procurement dollars in the amount of $169.290 million will procure 25 UH-60Vs. The UH-60 A to L conversion program expands the current UH-60 A to A recapitalization/rebuild program to a UH-60 A to L recapitalization/rebuild program. Effective in FY16, all A to L conversions and UH-60V conversions will be procured under this line, A05009. Prior to FY16 the funding for UH-60 A to L conversions was utilized under Black Hawk Modifications line AA0492.

The current H-60 Black Hawk Army Acquisition Objective (AAO) is 2135 which is obtained by procuring a combination of 1,375 new 60M and 760 Recapitalized (A/L/V) aircraft.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
**Description:**

UH-60 A and L Models includes UH-60 A to L conversions and the UH-60L Digital conversions, now designated as UH-60V.

UH-60V aircraft cost includes all digital components and their associated cost, as well as Engineering Changes, Systems Engineering and Program Management, Trainers, Data and Fielding.

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**Resource Summary**

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*The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.*
### Models of Systems Affected: UH-60 A and L

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<th>ID Code</th>
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<th>P-1 Line Item Number / Title</th>
<th>Modification Number / Title</th>
<th>Modification Type</th>
<th>Related RDT&amp;E PEs:</th>
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### Financial Plan

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<th>Recurring</th>
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### Installation

| Modification Item 1 of 2: UH-60A to UH-60L Conversions | 1,083 / 0.000 | 29 / 0.000 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | 1,112 / 0.000 |

**Total Cost (Procurement + Support + Installation)**

**Exhibit P-3a, Individual Modification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6773A05009 / UH-60 Black Hawk L and V Models

**Modification Number / Title:**
A05009 / UH-60 A and L Models (A05009)

**ID Code** (A=Service Ready, B=Not Service Ready) :

**Manufacturer Information**
Manufacturer Name: Corpus Christi Army Depot
Manufacturer Location: Corpus Christi Army Depot

**Administrative Leadtime (in Months):**
Production Leadtime (in Months): 12

### Installation Information

**Method of Implementation:** Depot

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<td>Qty (Each) / Total Cost ($M)</td>
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### Installation Schedule

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**LI 6773A05009 - UH-60 Black Hawk L and V Models**
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**Installation Information**

**Method of Implementation:** Various

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**Total Cost**

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### Description:
The CH-47F Chinook is a twin-turbine, tandem-rotor, heavy-lift transport helicopter with a useful load of up to 25,000 pounds. As the Army's only heavy lift helicopter, the CH-47F Improved Cargo helicopter is an essential component of the Army's Multi-Domain Battle framework. The CH-47F and MH-47G helicopters perform over 95% of the Army's heavy lift missions up to 25,000 pounds. The Chinook fleet has multiple missions including: transport troops (air assault), supply and resupply, weapons, equipment and other cargo operations. Operating throughout theater in combat, combat support, and combat service support roles. The CH-47F is vital to Overseas Contingency Operations and Homeland Security needs of our nation. Secondary missions include medical evacuation, aircraft recovery, parachute drops, disaster relief, and search and rescue. These aircraft are fielded to heavy lift companies contained within Combat Aviation Brigades and Special Operations Aviation. The CH-47F and MH-47G aircraft is expected to remain in service through 2047, allowing for a seamless transition to the CH-47F Block II, which will be fielded to fulfill the mission needs of the Army's heavy lift helicopter for the next several decades. To maintain the Chinook the Army’s only heavy-lift cargo helicopter, the CH-47F Block II program will insert critical and affordable technologies into the Chinook fleet to affordably maintain the platform's operational capabilities while continuing to meet the Warfighter requirements. Key improvements include the Advanced Chinook Rotor Blade, upgraded transmissions and rotor heads, and strengthened airframe to increase payload across the full spectrum of operational environments. Other improvements include an upgraded electrical system and higher capacity fuel tanks along with aircraft software updates.

The CH-47F Block I ReNew and New Build programs rebuild or replace the CH-47D aircraft for the conventional Army fleet and 69 Special Operations Aircraft to the Block I configurations. The CH-47F PM is fielding and training Combat Aviation Brigades (CABs), NG/USAR units using a New Equipment Training team.

PM Cargo procurement lines provide the common portion of funding for the Special Operations Aircraft, MH-47G. CH-47F Block II Product Office, in conjunction with Technology applications Project Office (TAPO), is replacing the aging fleet of MH-47G aircraft that has airframe components dating back more than 45 years. The MH-47G program, while complementary to the Block II program, is a separately managed Technology Applications Project Office (TAPO) ARSOAC program with a stand-alone Acquisition Strategy. The current Army Acquisition Objective (AAO) is 542 aircraft.

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LI 6775A05101 - CH-47 Helicopter

UNCLASSIFIED
**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army  
**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary  
**P-1 Line Item Number / Title:**  
6775A05101 / CH-47 Helicopter  
**ID Code** (A=Service Ready, B=Not Service Ready):  
Program Elements for Code B Items: N/A  
Other Related Program Elements: N/A  
**Line Item MDAP/MAIS Code:** N/A  

### Exhibits Schedule

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<th>Type</th>
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<th>Subexhibits</th>
<th>ID</th>
<th>CD</th>
<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
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</thead>
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<td>A05008 / CH-47 NEW BUILD</td>
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<td>189 / 5,202.541</td>
<td>10 / 368.236</td>
<td>- / -</td>
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<td>P-5</td>
<td>A05105 / CH-47 SLEP</td>
<td>P-5a, P-21</td>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

### Justification:

FY 2020 Base procurement dollars in the amount of $158.476 million supports Army common material funding for 8 MH-47G variant ReNew aircraft.

FY 2020 OCO procurement dollars in the amount of $25.0 million supports Army common material funding for 1 MH-47G variant War Replacement aircraft.

Note: P-1 OCO quantity is in error. P-40 OCO quantity is correct.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L.110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
### Resource Summary

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<tr>
<th>Procurement Quantity (Units in Each)</th>
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<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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#### Gross/Weapon System Unit Cost

- Gross Weapon System Cost ($ in Millions): 5,202.541
- Fiscal Year Advance Procurement ($ in Millions): 32.759
- Net Procurement (P-1) ($ in Millions): 5,169.782
- Plus CY Advance Procurement ($ in Millions): 32.759
- Total Obligation Authority ($ in Millions): 5,202.541

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.

### Procurement Quantity

- Initial Spares ($ in Millions): 2.564
- Gross/Weapon System Unit Cost ($ in Thousands): 27,526.672

### Unit Cost

- $ (K): 5,202.541
- (Each): 368.236
- Total ($ M): 36,823.600

#### FY 2018

- Total Cost ($ M): 36,823.600
- 25.000

#### FY 2019

- Total Cost ($ M): 368.236
- 25.000

#### FY 2020

- Total Cost ($ M): 25,000
- 25,000

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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<tr>
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<td>5,202.541</td>
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</table>

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

UNCLASSIFIED
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6775A05101 / CH-47 Helicopter

**Item Number / Title [DODIC]:**
A05008 / CH-47 NEW BUILD

**Date:** March 2019

**ID Code** (A=Service Ready, B=Not Service Ready):

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<td>Total Obligation Authority</td>
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### Resource Summary

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<th>Procurement Quantity (Units in Each)</th>
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#### Gross/Weapon System Cost ($ in Millions)

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#### Total Obligation Authority ($ in Millions)

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(These following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

#### Initial Spares ($ in Millions)

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### Note:

Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
Exhibit P-5, Cost Analysis: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A / 01 / 20

P-1 Line Item Number / Title:
6775A05101 / CH-47 Helicopter

Item Number / Title [DODIC]:
A05105 / CH-47 SLEP

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(†) indicates the presence of a P-5a
### Exhibit P-5a, Procurement History and Planning: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6775A05101 / CH-47 Helicopter

**Item Number / Title [DODIC]:**
A05105 / CH-47 SLEP

**Date:** March 2019

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<th>Method/Type or Funding Vehicle</th>
<th>Location of PCO</th>
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<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
<th>Specs Avail Now?</th>
<th>Date Revision Available</th>
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(†) indicates the presence of a P-21
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#### Fiscal Year 2019

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#### MH-47G Block I to Block II Army Common Funding

<table>
<thead>
<tr>
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</table>

<table>
<thead>
<tr>
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<th>Item Number / Title [DODIC]: A05105 / CH-47 SLEP</th>
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</thead>
</table>

| 1  | 2018 | ARMY | 4 | 0 | 4 |
| 2  | 2019 | ARMY | 7 | 0 | 7 |
| 3  | 2020 | ARMY | 8 | 0 | 8 |
**Exhibit P-21, Production Schedule:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6775A05101 / CH-47 Helicopter

**Item Number / Title [DODIC]:**
A05105 / CH-47 SLEP

### Cost Elements (Units in Each)

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<th>PROC QTY</th>
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<th>BAL DUE AS OF 1 OCT</th>
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<th>Calendar Year 2020</th>
<th>Fiscal Year 2021</th>
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MH-47G Block I to Block II Army Common Funding

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<th>QTY</th>
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**Date:** March 2019
Exhibit P-21, Production Schedule: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 01 / 20
P-1 Line Item Number / Title: 6775A05101 / CH-47 Helicopter
Item Number / Title [DODIC]: A05105 / CH-47 SLEP

Date: March 2019

### Cost Elements

<table>
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<th>Fiscal Year 2023</th>
<th>Calendar Year 2023</th>
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<td>O C R # FY SERVICE</td>
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MH-47G Block I to Block II Army Common Funding

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<td>R</td>
<td>T V C N B R R Y N L G P T V C N B R R Y N L G P</td>
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</table>

LI 6775A05101 - CH-47 Helicopter

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Page 10 of 11

P-1 Line #15
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 01 / 20  
**P-1 Line Item Number / Title:** 6775A05101 / CH-47 Helicopter  
**Item Number / Title [DODIC]:** A05105 / CH-47 SLEP  
**Date:** March 2019

<table>
<thead>
<tr>
<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>Production Rates (Each / Year)</th>
<th>Procurement Leadtime (Months)</th>
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<td>Boeing - Philadelphia PA</td>
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<table>
<thead>
<tr>
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<th>ALT</th>
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<tr>
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<tr>
<td>After Oct 1</td>
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<td>Total After Oct 1</td>
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<td></td>
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</tbody>
</table>

"A" in the Delivery Schedule indicates the Contract Award Date.

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
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Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
6775A05101 / CH-47 Helicopter

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

<table>
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<tr>
<th></th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
</tr>
</thead>
</table>

Description:
The CH-47F Chinook is a twin-turbine, tandem-rotor, heavy lift transport helicopter with a useful load of up to 25,000 pounds.

To maintain the Chinook the Army's only heavy-lift cargo helicopter, the CH-47F Block II program will insert critical and affordable technologies into the Chinook fleet to affordably maintain the platform's operational capabilities while continuing to meet the Warfighter requirements. Key improvements include the Advanced Chinook Rotor Blade, upgraded transmissions and rotor heads, and strengthened airframes to increase payload across the full spectrum of operational environments. Other improvements include an upgraded electrical system and higher capacity fuel tanks along with aircraft software updates. The 11 September 2015 Program Delegation Acquisition Decision Memorandum (ADM) designated the CH-47F Block II as an Acquisition Category (ACAT) 1C program with the Milestone Decision Authority (MDA) delegated to the Secretary of the Army. The EMD Phase began in 2017 following the Milestone (MS) B decision in July 2017.

PM Cargo procurement lines provide the common portion of funding for the Special Operations Aircraft, MH-47G. CH-47F Block II in conjunction with Technology Applications Project Office (TAPO) is replacing the aging fleet of MH-47G aircraft that has airframe components dating back more than 45 years. The MH-47G program, while complementary to the Block II program, is a separately managed Technology Applications Project Office (TAPO) ARSOAC program with a stand-alone Acquisition Strategy. The current Army Acquisition Objective (AAO) is 542 aircraft.
Exhibit P-40, Advance Procurement Budget Line Item Justification: PB 2020 Army

P-1 Line Item Number / Title: 6775A05101 / CH-47 Helicopter

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibit Schedule

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<tr>
<th>Exhibit Type</th>
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<td>A05105 / CH-47 Slep</td>
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<td>4 / 17,820</td>
<td>7 / 20,778</td>
<td>8 / 18,186</td>
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<td>P-40</td>
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<td>9 / 18,186</td>
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</table>

*Title represents the P-10 Title for Advance Procurement.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Advanced procurement dollars in the amount of $18.186 million will procure the MH-47G common portion of the airframe advance procurement requirement.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L.110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
### Exhibit P-10, Advance Procurement Requirements Analysis

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 01 / 20

**P-1 Line Item Number / Title:**
6775A05101 / CH-47 Helicopter

**P-5 Number / Title:**
A05105 / CH-47 SLEP

**Date:** March 2019

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<th>FY 2019</th>
<th>FY 2020</th>
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<tr>
<td></td>
<td>(Months)</td>
<td>(Each)</td>
<td>(Each)</td>
<td>(Each)</td>
<td>(Each)</td>
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<tr>
<td>Quantity</td>
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<td>4</td>
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<td><strong>615.653</strong></td>
<td><strong>17.820</strong></td>
<td><strong>20.778</strong></td>
<td><strong>18.186</strong></td>
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<tr>
<td><strong>Total Advance Procurement/Obligation Authority</strong></td>
<td></td>
<td><strong>615.653</strong></td>
<td><strong>17.820</strong></td>
<td><strong>20.778</strong></td>
<td><strong>18.186</strong></td>
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<tr>
<td>Cost Elements</td>
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<td></td>
<td>QPA</td>
<td>Production Leadtime (Months)</td>
<td>Unit Cost ($K)</td>
<td>Contract Forecast Date (Each)</td>
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<tr>
<td><strong>Total Advance Procurement/Obligation Authority</strong></td>
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**Description:**
N/A
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 01: Aircraft / BSA 20: Rotary

P-1 Line Item Number / Title:
9990A19900 / Spectrum Army SUAS

ID Code (A=Service Ready, B=Not Service Ready): N/A

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |

Description:
The Commercial Spectrum Enhancement Act (CSEA) Title II, Public Law 108-494, dated December 23, 2004, established the Spectrum Relocation Fund (SRF) to provide Federal agencies a mechanism to recover the costs associated with relocating communication systems from spectrum bands which were auctioned for commercial purposes.

- The SRF is funded with proceeds from Federal Communications Commission (FCC) conducted auctions of spectrum licenses.
- SRF funds have an indefinite obligation period and remain available until expended (X Year).
- The Department of Defense (DoD) Information Officer (CIO) executes oversight of the DoD spectrum relocation and sharing efforts.

<table>
<thead>
<tr>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Justification:
Manned Unmanned Teaming provides Apache Block AH-64 attack helicopters the ability to display real time sensor video from UAS sensors, battlefield sensors or onboard sensor video to the Apache Aircrews. The use of the onboard or off-board sensor video by the warfighter dramatically reduces engagement timelines and increases situational awareness.

The budget request for Spectrum Army Small Unmanned Aerial Systems (SUAS) will fund the Manned/Unmanned teaming with the change in Small UAS frequency which encompasses a wide range of activity including modification, integration, testing, and production of MUMT-X, MUMT-2 and ROVER 6 radios.
The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor system for the Gray Eagle Unmanned Aircraft System (UAS) that detects radio frequency (RF) emitters. The TSP system provides wide area, near real time RSTA capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The SAR mode generates quality images for the battlefield commander to provide wide area, near real time RSTA capabilities. Current product improvements continue to focus on the development and implementation of technologies that directly support emerging requirements of the Army's Current and Future Force.

Small TActical Radar - Lightweight (STARLite) SAR/MTI is a lightweight, high performance, all weather, multi-functional radar system for the Gray Eagle Unmanned Aircraft System (UAS). The STARLite system provides wide area, near real time RSTA capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The SAR mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The MTI mode detects moving ground targets, to include man-sized detection, and provides location information and performs cross-cue with the Electro-Optic/InfraRed (EO/IR) sensors.

The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor system for the Gray Eagle Unmanned Aircraft System (UAS) that detects radio frequency (RF) emitters. The TSP system provides a SIGINT capability to the tactical commander. The TSP system is a modular, scalable payload using an architecture that is software reconfigurable to allow for growth and flexibility as technology, and as the adversaries use of technology changes. This flexible architecture allows for third party software applications to be integrated into the TSP system. The TSP system processing, control and data dissemination is integrated into the Distributed Common Ground System - Army (DCGS-A) via the Operational Ground Station. It supports Manned/Unmanned (MUM) teaming with Brigade Combat Team ground SIGINT.
Terminal Guidance (STG) teams and manned airborne assets. The TSP system improves situational awareness and shortens the targeting cycle by detecting and identifying emitters associated with high value targets (HVTs). The TSP system is capable of processing conventional signals, standard military signals, and modern signals of interest. This includes detection, recognition, identification, direction finding, and high confidence geo-location.

MQ-1C Gray Eagle Extended Range (GE-ER) - Program Manager Unmanned Aircraft Systems (PM UAS) received a Congressional plus up of $49M President's Budget 15 (PB15) to procure Extended Range UAS which increases the CPD objective endurance requirements for the current GE configuration. To meet the PM UAS GE-ER test schedule 1st QTR FY18 and first unit equipped date, TSP must be integrated and tested on the IGE and the A-Kit must be modified.

<table>
<thead>
<tr>
<th></th>
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Justification:
CSP: FY2020 No Base or OCO Procurement dollars.
STARLite: FY 2020 No Base or OCO Procurement dollars.
TSP: FY 2020 No Base or OCO Procurement dollars.

All Quantities are for the Active component.

Comments:
In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for the homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
Universal Ground Control Station (UGCS) software and hardware modernization efforts mitigate costly maintenance and testing burden by utilizing an open software architecture that supports the separation of flight and mission critical functionality. Builds software infrastructure that will support current and emerging Unmanned Aircraft Systems (UAS) Universal Ground Control Station (UGCS) as well as Scalable Control Interface (SCI) requirements.

Current Universal Products consist of the UGCS, the Universal Ground Data Terminal (UGDT) and the Universal Mission Simulator (UMS). The Universal Products will be capable of flight and payload control of multiple unmanned aircraft systems. UGCS is protected in a climate-controlled, standard S-280 or S-788 U.S. Army shelter and mounted on either a standard Army FMTV or HMMWV, the UGCS receives and disseminates battlefield video and situational awareness data through state-of-the-art operator consoles. Consoles can be used to provide aircraft command and control, payload control and weapons launch. Future GCS modifications will allowed scaled down sizes of GCS to support expeditionary operations.

The UGDT provides a Line of Sight (LOS) capability for transmit and receipt of UAS command and control and UAS payload products. The UGDT is the common data link system for U. S. Army UAS.

The Universal Mission Simulator (UMS) consists of the hardware and software required to fully train UAS operators to full Readiness Level (RL) 1. The UMS will be capable of training and simulating flight and payload control of [Directorate of Simulation (DOS)] Shadow and Gray Eagle unmanned aircraft systems.

The OSRVT Increment II consists of a Remote Operations Video Enhanced Receiver (ROVER), Miltope tablet, Antennas, UHF Modem, Type I encryption, Ku-Directional Antennas (KuDA) with an On-The-Move (OTM) capable variant, and an extended range Mobile Directional Antennas System (MDAS). Software supports decoding Telemetry Data from multiple Manned/Unmanned Aircraft Systems, provides Electro-Optical (EO)/Infrared (IR) payload control, and supports off-target calculations. OSRVT supports current operations and emerging requirements.
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title:
0028A02706 / Universal Ground Control Equipment (UAS)

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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Justification:
FY20 Base Procurement funds in the amount of $2.090 Million will be utilized to procure UGCS Hardware components modernization for Unmanned Aerial Systems (UAS) fleet to include but not limited to Gray Eagle (MQ-1C), and Shadow (RQ-7) Programs of Record.

Title: Universal Products (UGCS and UGDT)
The APA funding continues the procurement and implementation of hardware to address modernization while enforcing commonality across the U-Product fleet. Current planning allocates $2.090 Million for procurement of common UGCS computing/communications hardware and associated integration/qualification, and associated systems engineering, program management, and logistics support.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
### Description:
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), Signal Intelligence (SIGINT), and HELLFIRE missiles; providing a near all-weather mission capability. MQ-1C Gray Eagle is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities and Aviation Force 1.1 capabilities enabling Multi-Domain Battle (MDB) operations.

The Warrior Alpha Modification funding is required to bring the Warrior Alpha fleet to the latest configuration to include modernization to High Definition EO/IR/LD payloads, Beyond Line of Sight (BLOS) classified payloads and the Vortex payload system. These modernizations includes integration, new hardware, and software changes. The FY19 OCO funding procures ten (10) payloads and associated integration cost. The Warrior Alpha UAS provides 24 hour a day operations. The systems are capable of executing reconnaissance, security and intelligence collection. The system is non weapons capable. All systems are Government Owned Contractor Operated (GOCO) systems currently located at Dugway Proving Ground. Sensors/payloads include are Electro-Optical/Infrared/Laser Designator (EO/IR/LD), BLOS classified payloads and Vortex payloads. Providing a near all-weather mission capability the system is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) providing GOCS operation to Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for the modernization of the datalink system to enable multi-band communication for both Line of Sight and Beyond Line of Sight data transmission. Datalink modernization is a multi-phase initiative that involves procuring new SATCOM ground and air vehicle equipment as well as software updates. PIP funding also supports multi-phase integration efforts and hardware/software procurement in support of Army Assured Precision Navigation and Timing (A-PNT) requirements to allow the MQ-1C Gray Eagle to survive, persist, and thrive in GPS denied environments. Additionally, PIP funding supports Avionics Modernization efforts that include software partitioning and re-architecture to allow for separation of critical and non-critical functions on the platform, and addressing current system processing limitations with upgraded processors. These features serve as critical enablers for both the datalinks and A-PNT modernization efforts, as well as supporting incorporation of future mission equipment.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
0756AA6601 / Gray Eagle Mods2

**ID Code** (A=Service Ready, B=Not Service Ready):

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** 0305204A, 0305219A

**Line Item MDAP/MAIS Code:** N/A

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title:
0756AA6601 / Gray Eagle Mods2

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
0756AA6601 / Gray Eagle Mods2

**Justification:**
The Fiscal Year (FY) 2020 Aircraft Modification/Product Improvement Program (PIP) base funding of $14.699 million supports the procurement of the Global Positioning System (GPS) Denied equipment and transitioning SATCOM datalink to a multi-band frequency.

The base funding supports the second phase of a multi-phased approach for Assured Positioning Navigation and Timing (A-PNT) requirements to enable the MQ-1C Gray Eagle aircraft to navigate using current Electro-Optical (EO) / Infrared (IR) cameras and/or Pseudo-lite systems, allowing continued operations in a GPS-denied environment.

The modernization of the existing datalink enables transition from Ku-band frequency to a multi-band frequency enabling improved datalink security and increased bandwidth. Future hardware procurements will improve transportability and yield long-term cost savings by reducing Field Service Representative maintenance support. Datalink modernization is required in order for the MQ-1C Gray Eagle to operate in current and future battlefields. The modernization consists of procuring of new SATCOM ground and air vehicle equipment as well as software updates.
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 0756AA6601 / Gray Eagle Mods2

Modification Number / Title: A00002 / MQ-1C Gray Eagle Modifications

Date: March 2019

Resource Summary

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<th>FY 2019</th>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | - | 728.343 | 1,138.430 | - | - | - | - | - | - | - | 1,099.838 |

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Description:
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 Unmanned Aircraft System (UAS) fielded to all Army Divisions, Intelligence and Security Command and Army Special Operations Command in support of the commander's warfighting priorities and Aviation Force 1.1 capabilities enabling Multi-Domain Battle (MDB) operations.

The Warrior Alpha Modification funding is required to bring the Warrior Alpha fleet to the latest configuration to include modernization to High Definition EO/IR/LD payloads, Beyond Line of Sight (BLOS) classified payloads and the Vortex payload system. These modernizations includes integration, new hardware, and software changes. The FY19 OCO funding procures ten (10) payloads and associated integration cost. The Warrior Alpha UAS provides 24 hour a day operations. The systems are capable of executing reconnaissance, security and intelligence collection. The system is non weapons capable. All systems are Government Owned Contractor Operated (GOCO) systems currently located at Dugway Proving Ground. Sensors/payloads include are Electro-Optical/Infrared/Laser Designator (EO/IR/LD), BLOS classified payloads and Vortex payloads. Providing a near all-weather mission capability the system is a dedicated, assured, multi-mission Unmanned Aircraft System (UAS) providing GOCO operation to Army Special Operations Command in support of the commander's warfighting priorities.

The MQ-1C Gray Eagle Modification/Product Improvement Program (PIP) funding is required for the modernization of the datalink system to enable multi-band communication for both Line of Sight and Beyond Line of Sight data transmission. Datalink modernization is a multi-phase initiative that involves procuring new SATCOM ground and air vehicle equipment as well as software updates. PIP funding also supports multi-phase integration efforts and hardware/software procurement in support of Army Assured Precision Navigation and Timing (A-PNT) requirements to allow the MQ-1C Gray Eagle to survive, persist, and thrive in GPS denied environments. Additionally, PIP funding supports Avionics Modernization efforts that include software partitioning and re-architecture to allow for separation of critical and non-critical functions on the platform, and addressing current system processing limitations with upgraded processors. These features serve as critical enablers for both the datalinks and A-PNT modernization efforts, as well as supporting incorporation of future mission equipment.

Note: Each A-kit and B-kit modifies one (1) aircraft.

Secondary Distribution

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**Modification Type:** UNCLASSIFIED

### Models of Systems Affected: N/A

#### Procurement

**Modification Item 1 of 3:** Warrior Alpha Modification

- **A Kits**
  - Non-Recurring
    - Non-recurring engineering
    - Qty: 1 / Total Cost ($ M): 15.000
  - Subtotal: Non-Recurring
    - Qty: 1 / Total Cost ($ M): 15.000

- **B Kits**
  - Recurring
    - High Definition & BLOS Payload
      - Qty: 1 / Total Cost ($ M): 10 / 27.000
    - Subtotal: Recurring
      - Qty: 1 / Total Cost ($ M): 10 / 27.000
    - Subtotal: Warrior Alpha Modification
      - Qty: 1 / Total Cost ($ M): 10 / 32.000

**Modification Item 2 of 3:** Assured Positioning Navigation Timing Improvements

- **B Kits**
  - Recurring
    - Global Positioning System (GPS) Denied
      - Qty: 1 / Total Cost ($ M): 113 / 16.611
    - Subtotal: Recurring
      - Qty: 1 / Total Cost ($ M): 113 / 16.611
      - Total: 225 / 33.075
  - Non-Recurring
    - Software Updates
      - Qty: 1 / Total Cost ($ M): 1 / 24.310
    - Non-GPS Navigation NRE
      - Qty: 1 / Total Cost ($ M): 1 / 12.000
    - Program Management
      - Qty: 1 / Total Cost ($ M): 1 / 9.431
    - Navigator 2 Qualification
      - Qty: 1 / Total Cost ($ M): 1 / 17.730
    - Auto-pilot Improvements
      - Qty: 1 / Total Cost ($ M): 1 / 8.830
    - Avionics NRE
      - Qty: 1 / Total Cost ($ M): 1 / 10.000
    - Subtotal: Non-Recurring
      - Qty: 1 / Total Cost ($ M): 1 / 44.001
    - Subtotal: Assured Positioning Navigation Timing Improvements
      - Qty: 1 / Total Cost ($ M): 113 / 60.612
      - Total: 225 / 165.376

**Modification Item 3 of 3:** Datalink Modernization

- **B Kits**
  - Recurring
    - Datalink Modernization B-Kits
      - Qty: 1 / Total Cost ($ M): 1 / 2.716
      - Total: 17 / 25.110
### Models of Systems Affected:

- N/A

### Modification Type: UNCLASSIFIED

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### Installation

**Modification Item 2 of 3: Assured Positioning Navigation Timing Improvements**
- Qty (Each) / Total Cost ($M) | 113 / 4,068 | 112 / 4,032 | 1 / - | 5 / - | - / - | 1 / - | 1 / - | 1 / - | 1 / - | 225 / 8,100 |

**Modification Item 3 of 3: Datalink Modernization**
- Qty (Each) / Total Cost ($M) | 113 / 4,068 | 113 / 4,332 | 5 / 1,500 | - / - | 5 / 1,500 | 8 / 2,400 | 1 / 0,300 | 1 / 0,300 | 1 / 0,300 | - / - | 17 / 5,100 |

**Subtotal: Installation**
- Qty (Each) / Total Cost ($M) | 113 / 4,068 | 113 / 4,332 | 5 / 1,500 | - / - | 5 / 1,500 | 8 / 2,400 | 1 / 0,300 | 1 / 0,300 | 1 / 0,300 | - / - | 242 / 13,200 |

### Total

**Total Cost (Procurement + Support + Installation)**
- Qty (Each) / Total Cost ($M) | 74,291 | 129,781 | 14,699 | - | 14,699 | 14,089 | 1,662 | 1,548 | 1,495 | - | 237,565
### Exhibit P-3a, Individual Modification: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

#### P-1 Line Item Number / Title:
0756AA6601 / Gray Eagle Mods2

#### Modification Number / Title:
A00002 / MQ-1C Gray Eagle Modifications

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**Modification Item 1 of 3: Warrior Alpha Modification**

#### Manufacturer Information

- **Manufacturer Name:** General Atomics
- **Manufacturer Location:** Poway, CA
- **Administrative Leadtime (in Months):** 4
- **Production Leadtime (in Months):** 15

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#### Installation Information

- **Method of Implementation (Organic):** Replacement aircraft build
- **Installation Quantity:** 10
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
0756AA6601 / Gray Eagle Mods2

**Modification Number / Title:**
A00002 / MQ-1C Gray Eagle Modifications

**ID Code** (A=Service Ready, B=Not Service Ready):

**Modification Item 2 of 3:** Assured Positioning Navigation Timing Improvements

**Manufacturer Information**

Manufacturer Name: General Atomics (GA-ASI)

Manufacturer Location: Poway, CA

Administrative Leadtime (in Months): 4

Production Leadtime (in Months): 24

**Dates**

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<th>FY 2020</th>
<th>FY 2021</th>
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**Installation Information**

Method of Implementation: FSR Fielded Retrofits

**Installation Cost**

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<tr>
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**Installation Schedule**

<table>
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<tr>
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<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
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<th>FY 2023</th>
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<td>In</td>
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<td>-</td>
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LI 0756AA6601 - Gray Eagle Mods2

**UNCLASSIFIED**

Page 9 of 10

P-1 Line #20

108
### Modification Item 3 of 3: Datalink Modernization

**Manufacturer Name:** General Atomics (GA-ASI)  
**Manufacturer Location:** Poway, CA

#### Installation Information

**Method of Implementation:** FSR Fielded Retrofits

#### Installation Cost

<table>
<thead>
<tr>
<th>Installation Schedule</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
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**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
1036AZ2001 / Multi Sensor ABN Recon (MIP)

**Table: Resource Summary**

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
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<tr>
<td>Procurement Quantity (Units in Each)</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>1,136,248</td>
<td>106,775</td>
<td>117,274</td>
<td>35,189</td>
<td>80,260</td>
<td>115,449</td>
<td>116,153</td>
<td>75,834</td>
<td>90,469</td>
<td>45,309</td>
</tr>
<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>1,136,248</td>
<td>106,775</td>
<td>117,274</td>
<td>35,189</td>
<td>80,260</td>
<td>115,449</td>
<td>116,153</td>
<td>75,834</td>
<td>90,469</td>
<td>45,309</td>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>1,136,248</td>
<td>106,775</td>
<td>117,274</td>
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<td>80,260</td>
<td>115,449</td>
<td>116,153</td>
<td>75,834</td>
<td>90,469</td>
<td>45,309</td>
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</table>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

| Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | 284,062,000 | 26,693,750 | 39,091,333 | 17,594,500 | - | 57,724,500 | 116,153,000 | 15,168,800 | 15,078,167 | 9,061,800 | 60,117,033 |

**Description:**
AZ2001 Multi Sensor ABN Recon (MIP) is the Parent Line to Airborne Reconnaissance Low - Enhanced (MIP)(ARL-E) (AZ2050), EMARSS Payloads (MIP)(AZ2054) and Guardrail Payloads (MIP) (AZ2052), IAW the Aerial Layer 2020 Strategy.

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 IAW the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV), Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) Enabled workstations. ARL-E will be assigned to the U.S. Army Intelligence and Security Command's Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine (9). The Mission Equipment Package (MEP) objective is eight (8).

This funding line supports the procurement and modernization of eight (8) complete MEP sets, which includes the following sensors: one (1) COMINT subsystem capable of supporting theater net centric geolocation efforts, two (2) High Definition FMV sensors and one (1) Improved Synthetic Aperture Radar / Ground Moving Target Indicator (SAR/GMTI) radar subsystem or one (1) SAR/Dismounted Moving Target Indicator (DMTI) subsystem. The MEP will also include four (4) DCGS-A workstations, one (1) set of communication equipment (mission radios, Beyond line of Site (BLOS) and Line of Site (LOS) Data links). ARL-E will be capable of rapid installation of sensors in a plug and play, quick connect/disconnect, mounting system to allow various combinations of sensor-types in support of a wide-range of theater operations. All MEPs will include the infrastructure to plug and play a Hyper-spectral imagery (HSI) Payload purchased under a QRC program. Future Growth capabilities include: Wide-Area Aerial Surveillance (WAAS), Light Detection and Ranging (LiDAR) and Foliage Penetration Radar (FOPEN).

The overall Airborne Reconnaissance Low-Enhanced (ARL-E) procurement/modernization efforts are found in the following three (3) lines; AZ2050 ARL Payloads (Project Manager Sensors - Aerial Intelligence), A02109, ARL-E SEMA (MIP) and A02110 ARL-E SEMA Mods (MIP) (Fixed Wing Project Office). Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Office for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

LI 1036AZ2001 - Multi Sensor ABN Recon (MIP)

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Page 1 of 21

P-1 Line #21

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**Date:** March 2019
The Guardrail Common Sensor (GRCS) is an airborne Signals Intelligence (SIGINT) Collection and Location System capable of providing Tactical Commanders Near-Real Time intelligence. It provides a persistent capability to detect, locate and classify/identify critical targets with a relevant degree of timeliness and accuracy. GRCS is assigned to two (2) U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance (AISR) support to combatant commanders. In accordance with the Army's AISR 2020 strategy, the Army's Acquisition Objective/Army's Procurement Objective (AAO/APO) is 19 RC-12X; seven (7) fielded to 3rd MI BN; seven (7) fielded to the 204th MI BN, and five (5) pilot trainers to support Force Generation. The five (5) trainers are not equipped with Primary Mission Equipment (PME).

The overall GRCS procurement/modernization efforts are found in the following two lines: AZ2052 Guardrail Payloads (MIP) and A02111 GRCS SEMA MODS (MIP). Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Office for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's newest generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS is assigned to the U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. EMARSS is also assigned to the United States Army Training and Doctrine Command (TRADOC) in support of training at the US Army Intelligence Center of Excellence (USAICoE). The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT). Congressional Plus-up for up to two (2) EMARSS-E aircraft.

Each EMARSS variant has a distinct Mission Equipment Package (MEP). This funding line supports the pre-planned product improvements of the following sensor capabilities: SIGINT; Electro-optical/Infrared (EO/IR)/Full Motion Video (FMV); Communications Intelligence (COMINT) to include Big Iron; Wide Area Aerial Surveillance (WAAS); Light Imaging Detection and Ranging (LiDAR) and improved Synthetic Aperture RADAR / Moving Target Indicator (SAR/MTI) RADAR; line-of-site (LOS) and beyond line-of-site (BLOS) communications; and Processing Exploitation and Dissemination (PED) supporting two Distributed Common Ground System - Army (DCGS-A) enabled operator workstations.

The overall EMARSS procurement/modernization efforts are found in the following two lines; AZ2054 EMARSS Payloads (Project Manager Sensors - Aerial Intelligence) and A02112 EMARSS SEMA Mods (Fixed Wing Project Office). Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

EMARSS transitioned from A02005.
### UNCLASSIFIED

**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
1036AZ2001 / Multi Sensor ABN Recon (MIP)

**ID Code** (A=Service Ready, B=Not Service Ready):

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

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**Exhibits Schedule**

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<th>FY 2020 Base</th>
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**Exhibits Schedule**

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<th>Title*</th>
<th>Subexhibits</th>
<th>Quantity / Total Cost (Each)</th>
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<th>FY 2024</th>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

**Justification:**

FY 2020 base funding to support the overall ARL-E effort are found in the following two lines: AZ2050 ARL Payloads and A02110 ARL SEMA Mods (Project Manager Fixed Wing (PM FW)) (separate form).

The purpose of ARL-E AZ2050 is to procure, upgrade, test and integrate sensors; communications architecture for sensor information exploitation and dissemination; test, nonrecurring engineering, and integration in support of the ARL-E Payload program ensuring ARL-E is rapidly deployable world-wide against current, new, and emerging threats.

ARL-E FY 2020 Base procurement dollars in the amount of $32.895 million supports the procurement of one (1) Long Range Radar system and aircraft integration and test of one (1) system - aircraft 5.

ARL-E FY 2020 OCO procurement dollars in the amount of $45.000 million supports aircraft modifications for one (1) system - aircraft 5, system test and evaluation, Integrated Contractor Logistics Support, the procurement of one (1) set of Full Motion Video (FMV) MX-20 sensors, communications equipment, and sparing for ARL-E sensors and associated hardware.

The schedule (in/out) reflects the start of MEP SIL testing and completion of aircraft integration efforts.

FY 2020 funding to support the overall GRCS efforts are found in the following two lines; AZ2052 GRCS Payloads (Project Manager Sensors - Aerial Intelligence (PM SAI)) and A02111 GRCS SEMA (Project Manager Fixed Wing (PM FW)) (separate form).

The purpose of GRCS AZ2052 is to procure, upgrade, and integrate SIGINT sensors, as well as the communications suite, and processing, exploitation and dissemination equipment on Guardrail. This will ensure Guardrail is rapidly-deployable, world-wide, against current, new, and emerging threats.

GRCS FY 2020 Base APA procurement dollars in the amount of $0.148 million supports procurements of spare parts for SIGINT Enhancement effort.
<table>
<thead>
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<th>ID Code (A=Service Ready, B=Not Service Ready)</th>
<th>Program Elements for Code B Items</th>
<th>Other Related Program Elements</th>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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</table>

GRCS FY 2020 OCO APA procurement dollars in the amount of $25.260 million supports procurements for GRCS advanced signal enhancement efforts, integration and testing of the signal enhancement infrastructure for GRCS updated SIGINT sensor capabilities, to include: software porting, and hardware modernization efforts.

FY 2020 base funding to support the overall EMARSS efforts are found in the following two lines: AZ2054 EMARSS Payloads (per this form) and A02112 EMARSS SEMA (separate form).

The purpose of EMARSS AZ2054 is to support the procurement and upgrade of the following sensor payload capabilities: Signals Intelligence (SIGINT); Electro-optical/Infrared (EO/IR)/Full Motion Video (FMV); a Communications Intelligence (COMINT) to include Big Iron; Wide Area Aerial Surveillance (WAAS); Light Imaging Detection and Ranging (LiDAR) and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar; line-of-site (LOS) and beyond line-of-site (BLOS) communications; Processing Exploitation and Dissemination (PED) supporting two Distributed Common Ground System - Army (DCGS-A) enabled operator workstations; and pre-planned product improvements.

FY 2020 Base procurement dollars in the amount of $2.146 million supports EMARSS SIGINT Enhancements and engineering support.

FY 2020 OCO procurement dollars in the amount of $10.000 million supports five (5) upgrades to the Signals Intelligence (SIGINT) sensor payload capabilities on EMARSS-V, M and S. These upgrades are required for continued operational readiness for Operation Freedom's Sentinel (OFS) and Operation Inherent Resolve (OIR) mission support. Due to the variation of sensors and capabilities per variant, unit cost per SIGINT system upgrade differs significantly between EMARSS-V, M and S.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

All funding is in Active Component.
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
1036AZ2001 / Multi Sensor ABN Recon (MIP)

**Modification Number / Title:**
AZ2050 / ARL Mod-In-Service

**Date:** March 2019

**ID Code** (A=Service Ready, B=Not Service Ready):

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<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>1,050.289</td>
<td>59.938</td>
<td>80.119</td>
<td>32.895</td>
<td>45.000</td>
<td>77.895</td>
<td>78.588</td>
<td>49.071</td>
<td>45.103</td>
<td>18.342</td>
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<tr>
<td>Less FY Advance Procurement ($ in Millions)</td>
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<tr>
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<td>78.588</td>
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<td>45.103</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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<tr>
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<td>78.588</td>
<td>49.071</td>
<td>45.103</td>
<td>18.342</td>
<td>1,459.345</td>
</tr>
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</table>

(Initial Spares ($ in Millions))

| Quantity | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | 525,144.500 | 59,938,000 | 26,706,333 | 32,895,000 | - | 77,895,000 | - | 49,071,000 | 45,103,000 | 18,342,000 | - | 145,934,500 |

**Description:**

ARL-E FY 2020 Base procurement dollars in the amount of $32.895 million supports the procurement of one (1) Long Range Radar system and aircraft integration and test of one (1) system - aircraft 5.

ARL-E FY 2020 OCO procurement dollars in the amount of $45.000 million supports aircraft modifications for one (1) system - aircraft 5, system test and evaluation, Integrated Contractor Logistics Support, the procurement of one (1) set of Full Motion Video (FMV) MX-20 sensors, communications equipment, and sparing for ARL-E sensors and associated hardware.

The schedule (in/out) reflects the start of MEP SIL testing and the completion of aircraft integration/required test events.

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<td>45.000</td>
<td>77.895</td>
<td>78.588</td>
<td>49.071</td>
<td>45.103</td>
<td>18.342</td>
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| Quantity | - | - | - | - | - | - | - | - | - | - | - |
| Total Obligation Authority | 59.938  | 80.119  | 32.895       | 45.000      | 77.895       | 78.588  | 49.071  | 45.103  | 18.342  |
### Models of Systems Affected: ARL

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<th>Modification Type: Operational</th>
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<tr>
<td>Related RDT&amp;E PEs:</td>
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#### Financial Plan

**Modification Item 1 of 1: ARL Enhanced (ARL-E)**

#### Procurement

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<tr>
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<th>Recurring</th>
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<td></td>
<td>Program Mgt</td>
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<td></td>
<td>Spares</td>
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<td>Training and Documentation</td>
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<tr>
<td></td>
<td>Field Support</td>
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<td></td>
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<table>
<thead>
<tr>
<th>Non-Recurring</th>
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<tbody>
<tr>
<td>Non Recurring Engineering</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>B Kits</th>
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<tbody>
<tr>
<td></td>
<td>Upgrade MX-20D SWIR sensors</td>
</tr>
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<td></td>
<td>SAR/DMTI sensor</td>
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<tr>
<td></td>
<td>Communications procurement</td>
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<td>LRR/Integration</td>
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<td>COMINT</td>
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<td></td>
<td>HSI upgrade</td>
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<td></td>
<td>DCGS-A Workstations</td>
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<td></td>
<td>Upgrade MX-20HD Sensors</td>
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<td></td>
<td>MEP/PED System Integration Lab (SIL)</td>
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**ARL Enhanced (ARL-E)**

<table>
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<th>Installation</th>
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<tbody>
<tr>
<td>Modification Item 1 of 1: ARL Enhanced (ARL-E)</td>
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</tbody>
</table>

**Subtotal: Installation**

3 / 806.513 | 1 / 18.000 | 0 / 15.000 | 0 / 18.000 | 1 / 18.000 | 1 / 17.500 | 1 / 17.850 | 2 / 0.000 | 8 / 892.863
Exhibit P-3a, Individual Modification: PB 2020 Army  

Appropriation / Budget Activity / Budget Sub Activity:  
2031A / 02 / 10

P-1 Line Item Number / Title:  
1036AZ2001 / Multi Sensor ABN Recon (MIP)

Modification Number / Title:  
AZ2050 / ARL Mod-In-Service

ID Code (A=Service Ready, B=Not Service Ready): 

MDAP/MAIS Code:

Models of Systems Affected: ARL  

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<th>Financial Plan</th>
<th>Prior Years</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<td>Qty (Each) / Total Cost ($ M)</td>
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<tr>
<td>Total Cost (Procurement + Support + Installation)</td>
<td>1,050.289</td>
<td>59.938</td>
<td>80.119</td>
<td>32.895</td>
<td>45.000</td>
<td>77.895</td>
<td>78.588</td>
<td>49.071</td>
<td>45.103</td>
<td>18.342</td>
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<td>1,459.345</td>
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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 1036AZ2001 / Multi Sensor ABN Recon (MIP)
Modification Number / Title: AZ2050 / ARL Mod-In-Service

ID Code (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

Modification Item 1 of 1: ARL Enhanced (ARL-E)

Manufacturer Information
Manufacturer Name: Leidos
Manufacturer Location: Maryland
Administrative Leadtime (in Months): 6
Production Leadtime (in Months): 24

Method of Implementation: Contractor

Installation Schedule

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<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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<tr>
<td>PYS</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
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</table>
**Description:**

The Guardrail Common Sensor (GRCS) is an airborne Signals Intelligence (SIGINT) Collection and Location System capable of providing Tactical Commanders Near-Real Time intelligence. It provides a persistent capability to detect, locate and classify/identify critical targets with a relevant degree of timeliness and accuracy. GRCS is assigned to two (2) U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance (AISR) support to combatant commanders. In accordance with the Army’s AISR 2020 strategy, the Army’s Acquisition Objective/Army’s Procurement Objective (AAO/APO) is 19 RC-12X; seven (7) fielded to 3rd MI BN; seven (7) fielded to the 204th MI BN, and five (5) pilot trainers to support Force Generation. The five (5) trainers are not equipped with Primary Mission Equipment (PME).

The overall GRCS procurement/modernization efforts are found in the following two lines: AZ2052 Guardrail Payloads (MIP) and A02111 GRCS SEMA MODS (MIP). Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Office for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Office for Intelligence, Electronic Warfare, and Sensors.

GRCS FY 2020 Base APA procurement dollars in the amount of $0.148 million supports procurement of spare parts for the GRCS SIGINT enhancement effort.

GRCS FY 2020 OCO APA procurement dollars in the amount of $25.260 million supports procurement for GRCS advanced signal enhancement efforts, integration and testing of the signal enhancement infrastructure for GRCS updated SIGINT sensor capabilities to include: software porting, and hardware modernization efforts.

### Resource Summary

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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(Initial Spares ($ in Millions) - - - - - - - - - - - -)

Gross/Weapon System Unit Cost ($ in Thousands) - - - - - - 9,499,000 12,482,333 8,223,000 - 30,624,286

### Initial Spares

- - - - - - - - - - - -

- - - - - - - - - - - -

### Army

<table>
<thead>
<tr>
<th>Description:</th>
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<tbody>
<tr>
<td>The Guardrail Common Sensor (GRCS) is an airborne Signals Intelligence (SIGINT) Collection and Location System capable of providing Tactical Commanders Near-Real Time intelligence. It provides a persistent capability to detect, locate and classify/identify critical targets with a relevant degree of timeliness and accuracy. GRCS is assigned to two (2) U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance (AISR) support to combatant commanders. In accordance with the Army's AISR 2020 strategy, the Army's Acquisition Objective/Army's Procurement Objective (AAO/APO) is 19 RC-12X; seven (7) fielded to 3rd MI BN; seven (7) fielded to the 204th MI BN, and five (5) pilot trainers to support Force Generation. The five (5) trainers are not equipped with Primary Mission Equipment (PME).</td>
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<td>Army</td>
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<td>25.408</td>
<td>25.389</td>
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The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Gross/Weapon System Unit Cost ($ in Thousands):**

- 9,499,000
- 12,482,333
- 8,223,000
- 30,624,286

The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**GRCS FY 2020 OCO APA procurement dollars in the amount of $25.260 million supports procurement for GRCS advanced signal enhancement efforts, integration and testing of the signal enhancement infrastructure for GRCS updated SIGINT sensor capabilities to include: software porting, and hardware modernization efforts.**
## Models of Systems Affected: See individual Mods

### Financial Plan

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<th>Procurement</th>
<th>Prior Years</th>
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<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2020</th>
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### Modification Item 1 of 6: CHALS-SD Sensor Upgrades

#### B Kits

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<td>Sensor Hardware &amp; Materials</td>
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<td>Subtotal: CHALS-SD Sensor Upgrades</td>
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### Modification Item 2 of 6: ELINT Sensor Upgrades

#### B Kits

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<td>Program Mgt</td>
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### Modification Item 3 of 6: SIGINT Suite Sensor Upgrades

#### B Kits

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| **Modification Item 6 of 6: Full Motion Video (FMV)** | | | | | | | | | | | | |
| A Kits | | | | | | | | | | | | |
| Recurring | | | | | | | | | | | | |
| PMO, I&T, Spares | - / 5.825 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |
| Subtotal: Recurring | - / 5.825 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |
| **Modification Item 6 of 6: Full Motion Video (FMV)** | | | | | | | | | | | | |
| A Kits | | | | | | | | | | | | |
| Recurring | | | | | | | | | | | | |
| Fielding, PMO, spares, FSR & Pilot splt | 1 / 6.609 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |
| Subtotal: Recurring | 1 / 6.609 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |
| B Kits | | | | | | | | | | | | |
| Recurring | | | | | | | | | | | | |
| Camera Reset | - / 3.073 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |
| Subtotal: Full Motion Video (FMV) | 1 / 9.682 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - |

### Installation

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**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 02 / 10

**P-1 Line Item Number / Title:**  
1036AZ2001 / Multi Sensor ABN Recon (MIP)

**Modification Number / Title:**  
AZ2052 / Guardrail MODS MIP

**ID Code:** (A=Service Ready, B=Not Service Ready) :

**MDAP/MAIS Code:**

**Modification Item 1 of 6:** CHALS-SD Sensor Upgrades

### Manufacturer Information

**Manufacturer Name:** ACET  
**Manufacturer Location:** Sacramento, CA  
**Administrative Leadtime (in Months):** 4  
**Production Leadtime (in Months):** 18

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### Installation Information

**Method of Implementation:** Contractor

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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 1036AZ2001 / Multi Sensor ABN Recon (MIP)

Modification Number / Title: AZ2052 / Guardrail MODS MIP

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LI 1036AZ2001 - Multi Sensor ABN Recon (MIP)  
Army  
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Page 14 of 21  
P-1 Line #21

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Manufacturer Information

Manufacturer Name: SNC EIS
Manufacturer Location: Los Gatos, CA
Administrative Leadtime (in Months): 3
Production Leadtime (in Months): 12

ELINT Sensor Upgrades
OCO: 3
FY 2019: 0
FY 2020: 0
FY 2021: 0
FY 2022: 0
FY 2023: 0
FY 2024: 0

Installation Schedule

MDAP/MAIS Code: P-1 Line Item Number / Title: 1036AZ2001 / Multi Sensor ABN Recon (MIP)
### Installation Information

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**Installation Information**

**Method of Implementation:** TBD

**Installation Schedule**

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**Method of Implementation:** PASS Contract W175 PT-10-D-0420 KZ01

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### Exhibit P-3a, Individual Modification: PB 2020 Army

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**ID Code** (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

**Modification Item 5 of 6: LS**

### Manufacturer Information

**Manufacturer Name:** ACET

**Manufacturer Location:** APG, MD

**Administrative Leadtime (in Months):**

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### Installation Information

**Method of Implementation:** TBD

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UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 1036AZ2001 / Multi Sensor ABN Recon (MIP)

Modification Number / Title: AZ2052 / Guardrail MODS MIP

ID Code (A=Service Ready, B=Not Service Ready) :

MDAP/MAIS Code:

Modification Item 6 of 6: Full Motion Video (FMV)

Manufacturer Information

Manufacturer Name: ACET

Manufacturer Location: APG

Administrative Leadtime (in Months):

Production Leadtime (in Months):

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Installation Information

Method of Implementation: PASS Contract

Installation Cost

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Installation Schedule

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LI 1036AZ2001 - Multi Sensor ABN Recon (MIP)
Description:
The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army’s newest generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS is assigned to the U.S. Army Intelligence and Security Command’s Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. EMARSS is also assigned to the United States Army Training and Doctrine Command (TRADOC) in support of training at the U.S. Army Intelligence Center of Excellence (USAIcoE). The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT). Congressional Plus-up for up to two (2) EMARSS-E aircraft.

This funding line supports the procurement and upgrade of the following sensor payload capabilities: Signals Intelligence (SIGINT); Electro-optical/Infrared (EO/IR)/Full Motion Video (FMV); a Communications Intelligence (COMINT) to include Big Iron; Wide Area Aerial Surveillance (WAAS); Light Imaging Detection and Ranging (LiDAR) and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar; line-of-site (LOS) and beyond line-of-site (BLOS) communications; Processing Exploitation and Dissemination (PED) supporting two Distributed Common Ground System - Army (DCGS-A) enabled operator workstations; and pre-planned product improvements.

FY 2020 Base procurement dollars in the amount of $2.146 million supports EMARSS SIGINT Enhancements and engineering support.

FY 2020 OCO procurement dollars in the amount of $10.000 million supports five (5) upgrades to the Signals Intelligence (SIGINT) sensor payload capabilities on EMARSS-V, M and S. These upgrades are required for continued operational readiness for Operation Freedom's Sentinel (OFS) and Operation Inherent Resolve (OIR) mission support. Due to the variation of sensors and capabilities per variant, unit cost per SIGINT system upgrade and installation differs significantly between EMARSS-V, M and S.

### Resource Summary

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<tr>
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<td>Net Procurement (P-1) ($ in Millions)</td>
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<td>10.000</td>
<td>12.146</td>
<td>12.176</td>
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<td>Total Obligation Authority ($ in Millions)</td>
<td>47.993</td>
<td>12.467</td>
<td>18.809</td>
<td>2.146</td>
<td>10.000</td>
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<td>12.176</td>
<td>7.765</td>
<td>7.919</td>
<td>10.521</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Initial Spares ($ in Millions)

| Initial Spares ($ in Millions) | -       | -       | -       | -           | -            | -       | -       | -       | -       | -           | -    |

### Gross/Weapon System Unit Cost ($ in Thousands)

| Gross/Weapon System Unit Cost ($ in Thousands) | 23,996.500 | 4,155.667 | 2,146.000 | 12,146.000 | 12,176.000 | 3,882.500 | 3,959.500 | 5,260.500 | 9,984.308 |

### Fiscal Years

- **FY 2020**
- **FY 2021**
- **FY 2022**
- **FY 2023**
- **FY 2024**
### Models of Systems Affected: EMARSS

#### Financial Plan

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<tr>
<td><strong>A Kits</strong></td>
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<tr>
<td>Recurring</td>
</tr>
<tr>
<td>MEP Contractor Testing</td>
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<td>GFE/Initial Spares</td>
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<td>Engineering Support</td>
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<td>Mods in Service, SIGINT Upgrades</td>
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<tr>
<td>TSA OPT Integration</td>
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<td>A-Kit Procurements</td>
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<td>Mods in Service, LIDAR Upgrades</td>
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<td>Simulated Training Interface</td>
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</tbody>
</table>

| **B Kits**                              |
| Non-Recurring                           |
| MARSS 13 Upgrade                        | 8.625  |
| RESET WAAS for EMARSS-G                 | 8.625  |
| SIGINT                                  | 17.225 |
| **Subtotal: Non-Recurring**             | 17.225 |
|                                      | 2020   |
|                                      | 1.000  |
|                                      | 18.625 |
|                                      | 2020   |

| **Installation**                        |
| **Modification Item 1 of 1: EMARSS Payloads** |
| 4 / 18.300 1 / 5.188 1 / 1.700 - / 1.246 5 / 2.500 5 / 2.500 4 / 0.400 2 / 1.800 2 / 1.800 1 / 0.000 - / | 20 / 30.588 |

### Related RDT&E PEs:

#### Installation

**Modification Item 1 of 1: EMARSS Payloads**

- **A Kits**
  - **Recurring**
    - MEP Contractor Testing: 13.800
    - GFE/Initial Spares: 6.716
    - PMO and SETA Support: 2.332
    - Engineering Support: 1.620
    - Mods in Service, SIGINT Upgrades: 1.329
    - TSA OPT Integration: 6.020
    - A-Kit Procurements: 2.550
    - Mods in Service, LIDAR Upgrades: 1.934
    - Simulated Training Interface: 1.000
    - **Subtotal: Recurring** 14.468
  - **Non-Recurring**
    - MARSS 13 Upgrade: 8.625
    - RESET WAAS for EMARSS-G: 8.625
    - SIGINT: 17.225
    - **Subtotal: Non-Recurring** 17.225
  - **Subtotal: EMARSS Payloads** 5 / 31.693
  - **Subtotal: Procurement, All Modification Items** 5 / 31.693

- **B Kits**
  - **Non-Recurring**
    - MARSS 13 Upgrade: 8.625
    - RESET WAAS for EMARSS-G: 8.625
    - SIGINT: 17.225
    - **Subtotal: Non-Recurring** 17.225
  - **Subtotal: EMARSS Payloads** 5 / 31.693
  - **Subtotal: Procurement, All Modification Items** 5 / 31.693

**Installation**

- **Modification Item 1 of 1: EMARSS Payloads**
  - **A Kits**
    - **Recurring**
      - MEP Contractor Testing: 13.800
      - GFE/Initial Spares: 6.716
      - PMO and SETA Support: 2.332
      - Engineering Support: 1.620
      - Mods in Service, SIGINT Upgrades: 1.329
      - TSA OPT Integration: 6.020
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      - Mods in Service, LIDAR Upgrades: 1.934
      - Simulated Training Interface: 1.000
      - **Subtotal: Recurring** 14.468
    - **Non-Recurring**
      - MARSS 13 Upgrade: 8.625
      - RESET WAAS for EMARSS-G: 8.625
      - SIGINT: 17.225
      - **Subtotal: Non-Recurring** 17.225
    - **Subtotal: EMARSS Payloads** 5 / 31.693
    - **Subtotal: Procurement, All Modification Items** 5 / 31.693

- **B Kits**
  - **Non-Recurring**
    - MARSS 13 Upgrade: 8.625
    - RESET WAAS for EMARSS-G: 8.625
    - SIGINT: 17.225
    - **Subtotal: Non-Recurring** 17.225
  - **Subtotal: EMARSS Payloads** 5 / 31.693
  - **Subtotal: Procurement, All Modification Items** 5 / 31.693

### Total

- **Total Cost (Procurement + Support + Installation)** 47.993
  - 12.467
  - 18.809
  - 2.146
  - 10.000
  - 12.146
  - 12.176
  - 7.765
  - 7.919
  - 10.521
  - 129.796
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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 1036AZ2001 / Multi Sensor ABN Recon (MIP)

Modification Number / Title: AZ2054 / EMARSS Payloads

ID Code (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

Modification Item 1 of 1: EMARSS Payloads

Manufacturer Information

Manufacturer Name: TBD
Manufacturer Location: TBD
Administrative Leadtime (in Months): 8
Production Leadtime (in Months): 12

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Installation Information

Method of Implementation: EMARSS Modifications

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<th>FY 2020 OCO</th>
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Installation Schedule

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LI 1036AZ2001 - Multi Sensor ABN Recon (MIP)

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Page 21 of 21
P-1 Line #21

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: 2706AA6605 / AH-64 MODS

Modification of Aircraft

ID Code (=Service Ready, Br=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary

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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
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<td>238.141</td>
<td>104.996</td>
<td>58.172</td>
<td>-</td>
<td>58.172</td>
<td>85.475</td>
<td>84.505</td>
<td>82.166</td>
<td>64.682</td>
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<td>Less PY Advance Procure ($ in Millions)</td>
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<td>238.141</td>
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<td>-</td>
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<td>84.505</td>
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<td>64.682</td>
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<tr>
<td>Plus CY Advance Procure ($ in Millions)</td>
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<tr>
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<td>238.141</td>
<td>104.996</td>
<td>58.172</td>
<td>-</td>
<td>58.172</td>
<td>85.475</td>
<td>84.505</td>
<td>82.166</td>
<td>64.682</td>
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<td>180.439</td>
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</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions)

Flyaway Unit Cost ($ in Thousands)

Gross/Weapon System Unit Cost ($ in Thousands)

Description:

The AH-64 MODS (AA6606) program provides for modernization of the fielded AH-64D/AH-64E Apache fleet. AH-64D/AH-64E is a tandem cockpit, twin engine, single main rotor attack helicopter. The Apache aircraft incorporates the Longbow weapon system and provides the U.S. Army with significant target acquisition and firepower effectiveness, survivability, lethality, and fighting capabilities even during adverse weather conditions. The Apache is equipped with the Fire Control Radar/Radar Frequency Interferometer (FCR/RFI) mission kit and Fire and Forget Longbow HELLFIRE missiles. The Modernized Target Acquisition Designator Sight (MTADS) assembly is an Electro-Optical system that consists of a Day television (DTV), sensor, a Forward Looking Infrared (FLIR) sensor for day and night visibility as well as limited adverse weather operations, a Laser Spot Tracker (LST), and Laser Rangefinder/Designator (LRFD). The Modernized Pilot Night Vision Sensor (M-PNVS) is a FLIR system which allows Nap-of-Earth flight operations at night by the pilot independent of the co-pilot/gunner's FLIR. The Apache is armed with the HELLFIRE Antitank Missile, 2.75 inch rockets and a 30mm gun capable of defeating armor.

The AH-64 Mods Program allows for near-term operationally driven improvements to the Apache fleet, focusing on deployment lessons learned, and reliability improvements. Improvements will occur to the Airframe, Armament, Communications, Manned / Unmanned Teaming, Navigation, Sensors, Survivability, Support Elements, and Training Systems. Examples of modifications include Selected Component Recapitalization, Airframe and Sensor Capability upgrades, procurement of Modernized Day Sensor Assembly components, initial procurement of Modernized Radio-Frequency Interferometer (M-RFI), Software upgrades, Condition Based Maintenance (CBM), trainer concurrency, Computer/Processing and Data Display and Control upgrades. The AH-64D/AH-64E inventory crossover point (approx.400 AH-64D / 400 AH-64E) will occur in 2021. These modernization efforts are required to ensure the Longbow Apache remains a ready and relevant Soldier asset.

Secondary Distribution

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<td>82.166</td>
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LI 2706AA6605 - AH-64 MODS

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Page 1 of 13

P-1 Line #22

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**Justification:**


All COMPO 1 Active
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**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 2706AA6605 / AH-64 MODS  
**Modification Number / Title:** AA6606 / AH-64 Modifications  
**Date:** March 2019

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* (The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Initial Spares ($ in Millions)**: - - - - - - - - - -

**Gross/Weapon System Unit Cost ($ in Thousands)**: - - - - - - - - - -

**Description:**

Airframe includes modifications to the Structural Subsystems, Propulsion/Drive/Rotor Systems, Health Monitoring System, and Recap Support/Kits. Structural Subsystems modifications include improvements to the assembled structural and aerodynamic components of the air vehicle to include the fuselage and associated manual flight control systems, rotor equipment, landing gear and associated equipment, environmental controls, racks, mounts, intersystem cables and distribution boxes. Propulsion/Drive/Rotor Systems together with Engine Electronic Digital Engine Control Unit (EDECU) and Common Hydro-Mechanical Unit (CHMU) provides the capability to carry a heavier combat payload and allow for enhanced performance in high-altitude, hot climates. Landing Gear improvements (High Performance Shock Struts (HPSS)) will improve the aircraft crash survivability and allows for a heavier aircraft with greater combat loads. Provides sustainment, support and maintenance for the Apache test aircraft.

Mission Command includes modifications and/or upgrades to the various Apache processors and displays. Mission Computer / Processing modifications and/or upgrades include improvements to the master data processing unit(s) responsible for coordinating and directing the major avionics mission systems. System Simulation and Software Integration (S3I) Crew Station Working Group (CSWG) provides support for an AH-64E Engineering Analysis Cockpit as part of the Advance Prototyping and Engineering Experimentation (APBEX2) Lab to support continuous Operational Flight Program (OFP) software sustainment and product improvement. Battlefield Operations and Support System (BOSS) supports developmental / formal test to ensure interoperability and assists in certification testing of the Apache data link implementation. Data Link Test Tools (DLTT) supports developmental / formal test to ensure interoperability and assists in certification testing of the Apache data link implementation.

Sensors include modifications, operational improvements, and/or mitigation of capability issues to the Apache Sensor suite, which includes the MTADS/PNVS, the Modernized Day Sensor Assembly (MDSA). MDSA is the Modernized Laser Rangefinder/Designator (M-LFRD) which provides enhanced laser ranging, improved target designation, and target tracking capability by holding a stabilized laser beam on a distant stationary or moving point target for highly precise handoff to precision guided weapons. M-LFRD replaces the obsolete Laser Transceiver Unit, which mitigates ongoing risk, improves reliability and maintainability, and reduces operations and support costs. MDSA replaces the remaining legacy DSA components, adding a laser pointer, eye safe laser, and high definition color-camera capability. MDSA funding enables software integration, tooling, and test equipment procurement and system production.

Support Elements include the modification and production of those items, which are not part of the aircraft system but are required to maintain, service, or calibrate the aircraft systems or portions of the aircraft system while not directly engaged in the performance of its mission and will not be in the inventory for support of other weapon systems. Post Production Organic support establishes Depot Pilot Programs at Corpus Christi Army Depot (CCAD) and Tobyhanna Army Depot (TYAD) for selected Depot Level Repairables (DLR) as part of the Original Equipment Manufacturer (OEM) to Depot Transition. Post Production Organic Support (PPOS) provides Depot Plant Maintenance Equipment, Test Equipment, labor training and associated technical data for future repairs once the DLR has transitioned to the depot. PPOS improves Repair Turn Around Time and retain depot maintenance capabilities.

Training Systems include deliverable training services, Operator and Maintainer training devices, accessories, training aids, equipment, and parts used to facilitate instruction through which personnel will learn to operate and maintain the system with maximum efficiency. Examples include Operator / Maintainer Training (aircraft/room) devices, Cyber/RMF activities and new systems integration/concurrency to the
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 2706AA6605 / AH-64 MODS
Modification Number / Title: AA6606 / AH-64 Modifications

ID Code (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:
suite of training devices/systems, and updates to allow individual/team training tasks and collective training. Efforts include the production and upgrade of deliverable and fielded training systems, devices and equipment; updates to associated device/product hardware and software in the form of 3D Virtual Immersive Training, 3D models and desktop crew station emulation capability.

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Total: Secondary Distribution

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### Exhibit P-3a, Individual Modification: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

#### P-1 Line Item Number / Title:
2706AA6605 / AH-64 MODS

#### Modification Number / Title:
AA6606 / AH-64 Modifications

#### Models of Systems Affected:
- Longbow Apache

#### Related RDT&E PEs:
- Improvements and Resolve Obsolescence Issues

---

**Modification Type:** Operational & Reliability

---

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### Models of Systems Affected: Longbow Apache

**Modification Type:** Operational & Reliability

**Improvements and Resolve Obsolescence Issues**

**Related RDT&E PEs:**

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### Financial Plan

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**UNCLASSIFIED**
### Exhibit P-3a, Individual Modification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 2706AA6605 / AH-64 MODS  
**Modification Number / Title:** AA6606 / AH-64 Modifications  

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**Models of Systems Affected:** Longbow Apache  
**Modification Type:** Operational & Reliability Improvements and Resolve Obsolescence Issues  
**Related RDT&E PEs:**

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**Financial Plan**

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**Total Cost (Procurement + Support + Installation):** 8,653.142 M

Date: March 2019

LI 2706AA6605 - AH-64 MODS

Army

Page 7 of 13
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**P-1 Line Item Number / Title:** 2706AA6605 / AH-64 MODS  
**Modification Number / Title:** AA6606 / AH-64 Modifications  
**MDAP/MAIS Code:**

**Modification Item 1 of 6: Airframe**

### Manufacturer Information

- **Manufacturer Name:** Various
- **Manufacturer Location:** Various

### Installation Information

#### Method of Implementation: Modifications

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**LI 2706AA6605 - AH-64 MODS**

UNCLASSIFIED  
Army  
Page 8 of 13  
P-1 Line #22
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 2706AA6605 / AH-64 MODS  
**Modification Number / Title:** AA6606 / AH-64 Modifications

**ID Code** (A=Service Ready, B=Not Service Ready) :  
**MDAP/MAIS Code:**

**Modification Item 2 of 6:** Mission Command

### Manufacturer Information

- **Manufacturer Name:** Various  
- **Manufacturer Location:** Various

**Administrative Leadtime (in Months):**

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**Installation Information**

**Method of Implementation:**

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**Page 9 of 13**

LI 2706AA6605 - AH-64 MODS

**UNCLASSIFIED**

**Page 9 of 13**

P-1 Line #22

**UNCLASSIFIED**
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 2706AA6605 / AH-64 MODS

Modification Number / Title: AA6606 / AH-64 Modifications

ID Code (A=Service Ready, B=Not Service Ready) :

Modification Item 3 of 6: Sensors

Manufacturer Information

Manufacturer Name: Various

Administrative Leadtime (in Months): 2

Manufacturer Location: Various

Production Leadtime (in Months): 24

Method of Implementation: Modifications

Installation Information

Installation Schedule

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Date: March 2019
### Modification Information

**P-1 Line Item Number / Title:** 2706AA6605 / AH-64 MODS

**Modification Number / Title:** AA6606 / AH-64 Modifications

**Manufacturer Name:** Boeing / LSI Inc

**Manufacturer Location:** St. Louis, MO / Jacksonville, FL

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**Installation Information**

**Method of Implementation:** Field Retrofits

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**Installation Schedule**

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### UNCLASSIFIED

**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 02 / 10 

**P-1 Line Item Number / Title:**  
2706AA6605 / AH-64 MODS 

**Modification Number / Title:**  
AA6606 / AH-64 Modifications

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**Modification Item 5 of 6: Hellfire Missile Launchers**

### Manufacturer Information

**Manufacturer Name:** Lockheed Martin Missiles and Fire Control  
**Manufacturer Location:** Orlando, Florida

**Administrative Leadtime (in Months):**  
**Production Leadtime (in Months):**

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### Installation Information

**Method of Implementation:** Armament

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#### Installation Schedule

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</table>
Avionics updates and safety improvements to maintain the H-47F Avionics and Software systems include: the Common Avionics Architecture System (CAAS), the Digital Automatic Flight Control System (DAFCS), and the Cargo Platform Health Environment (CPHE) systems. Requirements driven by changes in military interoperability, cyber security threats, and commercial airspace navigation require software systems updates, testing, integration, training and logistics support. The funding priorities are the development, testing, and fielding of improvements in cyber security, aircraft handling qualities, Degraded Visual Environment (DVE) performance, COMSEC improvements, A-PNT integration, multi-core processors, and expansion of the flexibility provided by the CAAS Modular Open Systems Architecture.

CAAS provides the primary interface to the pilots for all aircraft systems. It monitors aircraft health, provides sophisticated navigation and communication capabilities, and provides tactical situational awareness and interoperability. The DAFCS provides aircraft stability and handling qualities necessary for safe aircraft handling in a variety of environmental and weather conditions. The CPHE system provides the mechanism to complete necessary rotor track and balance activities, evaluate drivetrain vibration levels for maintenance purposes, and record and evaluate the data necessary to have a Condition Based Maintenance and a Health and Usage Monitoring program. These three systems run on specialized computers that primarily consist of commercial electronic components. The rapid pace of change in the commercial electronics hardware market, the evolving cyber security threats, and the requirement to remain interoperable, create a need for recurring updates to the design of avionics hardware and software.

The CAAS V9.4 fielding provides enhancements to the CH-47F including updates for compatibility with the latest Blue Force Tracker (BFT) system, Aircraft Survivability Equipment (ASE), Automatic Dependent Surveillance Broadcast (ADS-B) Out and significant pilot-vehicle interface improvements aimed at improvements in Degraded Visual Environment (DVE) performance. The BFT update provides mandated Type 1 encryption and improvements in data timeliness. ASE driven software updates include the addition of the AVR-2B laser detection system and improved threat situational awareness to pilots. ADS-B Out capability is mandated by the FAA to operate in US airspace. Finally, the Training Aids, Devices, Simulators, and Simulations (TADSS) system computers and projectors require a technical refresh. If any of these systems fail, all TADSS devices (TFPS, CHMT, CAT, VIE) will not function, negatively impacting aircrew and maintainer training and availability at the unit level.
**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army  
**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft  
**P-1 Line Item Number / Title:**  
3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)

**ID Code (A=Service Ready, B=Not Service Ready):**  
Program Elements for Code B Items: N/A  
Other Related Program Elements: 0607137A  
**Line Item MDAP/MAIS Code:** 278

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<td>3,552</td>
<td>2,936</td>
<td>0.606</td>
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LI 3264AA0252 - CH-47 Cargo Helicopter Mods (MYP)
### Justification:

FY2020 Base procurement dollars in the amount of $11.785 million supports avionics updates and safety improvements. Funding addresses the interoperability of Key Performance Parameters (KPPs): supports software updates for the digital cockpits across the fleet, corrects software related safety issues, maintains software lab infrastructure.

In accordance with Section 1815 of the 2008 National Defense Authorization Act (P.L 110-181), this item is necessary for use by the Active and Reserve Components of Armed Forces for homeland and defense missions, domestic emergency responses and providing military support to civil authorities.
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)
Modification Number / Title: AA0252 / CH-47 Cargo Helicopter Mods

ID Code (A=Service Ready, B=Not Service Ready):
MDAP/MAIS Code:

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(Initial Spares ($ in Millions) - - - - - - - - - -)
(Gross/Weapon System Unit Cost ($ in Thousands) - - - - - - - - - -)

Description:
Avionics updates and safety improvements to maintain the H-47F Avionics and Software systems include: the Common Avionics Architecture System (CAAS), the Digital Automatic Flight Control System (DAFCS), and the Cargo Platform Health Environment (CPHE) systems. Requirements driven by changes in military interoperability, cyber security threats, and commercial airspace navigation require software systems updates, testing, integration, training and logistics support. The funding priorities are the development, testing, and fielding of improvements in cyber security, aircraft handling qualities, Degraded Visual Environment (DVE) performance, COMSEC improvements, A-PNT integration, multi-core processors, and expansion of the flexibility provided by the CAAS Modular Open Systems Architecture.

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## Modification Item 1 of 10: Block I CH-47 Safety Mods $5M or Less

### A Kits

**Recurring**

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## Modification Item 2 of 10: Block I Software Safety & Avionics Upgrades

### A Kits

**Non-Recurring**

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<td>Safety Impr (DVE, SW Corrections, Cyber)</td>
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### B Kits

**Recurring**

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## Modification Item 3 of 10: Block I Improved Vibration Control System (IVCS)

### A Kits
### Military Models

**Army CH-47 Cargo Helicopter Mods (MYP)**

**Modification Number / Title:** AA0252 / CH-47 Cargo Helicopter Mods

**Modification Type:** Unclassified

**UNCLASSIFIED**

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)

**ID Code** (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

### Models of Systems Affected: CH-47

### Financial Plan

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### Modification Item 4 of 10: Block I Cargo Platform Health Environment (CPHE)

- **A Kits**
  - **Recurring**
    - **Kits Type 1**: / 2,515.579
    - **Kits Type 2**: / 554.381
    - **CPHE Software Upgrade**: / 595.796
    - **Services**: / 57.549
    - **PM Support**: / 1.170
  - **Subtotal: Recurring**: / 3,724.475
- **Non-Recurring**
  - **NRE**: / 16.750
  - **Subtotal: Non-Recurring**: / 16.750
- **Subtotal: Block I Cargo Platform Health Environment (CPHE)**
  - / 3,731.225

### Modification Item 5 of 10: Improved Troop Seats (ITS)

- **A Kits**
  - **Recurring**
    - **Installation Kits**: / 14.678
  - **Subtotal: Recurring**: / 14.678
  - **Subtotal: Improved Troop Seats (ITS)**
    - / 14.678

### Modification Item 6 of 10: Block I Adjustable Pitch Change Link

- **A Kits**
  - **Recurring**
    - **Pitch Change Links**: / 2.311
    - **PM Support**: / 0.158
  - **Subtotal: Recurring**: / 2.469

**Total**

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**UNCLASSIFIED**

**LI 3264AA0252 - CH-47 Cargo Helicopter Mods (MYP)**

**UNCLASSIFIED**

**Army**

**Page 6 of 18**

**P-1 Line #23**
### Models of Systems Affected: CH-47

#### Financial Plan

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#### Modification Item 7 of 10: Block I COOLS & COOLS BPS

- **A Kits**
  - **Recurring**
    - **Cargo Handling Floor System**
      - FY 2018: 1,854.411
      - FY 2019: 1,333.768
      - FY 2020: 14,408
      - FY 2021: 29,300
      - FY 2022: 8,010
      - FY 2023: 2,229.897
      - FY 2024: 2,229.897

- **Modification Item 8 of 10: Block I Engine Improvements**
  - **A Kits**
    - **Recurring**
      - **TSS Engine Control Unit Prog (ECU)**
        - FY 2018: 45,000
        - FY 2019: 45,000
        - FY 2020: 1,495,000
        - FY 2021: 1,495,000
        - FY 2022: 1,495,000
        - FY 2023: 1,495,000
        - FY 2024: 1,495,000
  - **Non-Recurring**
    - **ECP NRE/Incorporation**
      - FY 2018: 1,062
      - FY 2019: 1,062
      - FY 2020: 1,062
      - FY 2021: 1,062
      - FY 2022: 1,062
      - FY 2023: 1,062
      - FY 2024: 1,062

| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 4,612,947 | / - | / - | / - | / - | / - | / - |

| Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 4,495,000 | / - | / - | / - | / - | / - | / - |

| Related RDT&E PEs: | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 0.000 | / - | / - | / - | / - | / - | / - |

| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 39.953 | / - | / - | / - | / - | / - | / - |

| Related RDT&E PEs: | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 14,500 | / - | / - | / - | / - | / - | / - |

| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 5.760 | / - | / - | / - | / - | / - | / - |

| Related RDT&E PEs: | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 14,613 | / - | / - | / - | / - | / - | / - |

| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
| 15.582 | / - | / - | / - | / - | / - | / - |

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| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
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| Related RDT&E PEs: | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
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| Total Cost | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 |
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## UNCLASSIFIED

**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Date:** March 2019  
**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)  
**Modification Number / Title:** AA0252 / CH-47 Cargo Helicopter Mods

### Financial Plan

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<th>FY 2020 Base</th>
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### Related RDT&E PEs:

**Installation**

- **Modification Item 3 of 10:** Block I Improved Vibration Control System (IVCS)
  - Total Cost (Procurement + Support + Installation): 11,020.063
- **Modification Item 4 of 10:** Block I Cargo Platform Health Environment (CPHE)
  - Total Cost (Procurement + Support + Installation): 2,936.0.606
- **Modification Item 7 of 10:** Block I COOLS & COOLS BPS
  - Total Cost (Procurement + Support + Installation): 1,545.38.982

**Total**

- Total Cost (Procurement + Support + Installation): 11,020.063
  - Continuing 11,020.063
  - Continuing 11,020.063
Exhibit P-3a, Individual Modification: PB 2020 Army

<table>
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<tr>
<th>Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10</th>
<th>P-1 Line Item Number / Title: 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)</th>
<th>Modification Number / Title: AA0252 / CH-47 Cargo Helicopter Mods</th>
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<td>ID Code (A=Service Ready, B=Not Service Ready):</td>
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**Modification Item 1 of 10**: Block I CH-47 Safety Mods $5M or Less

**Manufacturer Information**

- Manufacturer Name: TBD
- Manufacturer Location: TBD
- Administrative Leadtime (in Months): TBD
- Production Leadtime (in Months): TBD

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**Installation Information**

- Method of Implementation (Organic): Various
- Installation Quantity: 0
**Exhibit P-3a, Individual Modification:** PB 2020 Army  

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 02 / 10  

**P-1 Line Item Number / Title:**  
3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)  

**Modification Number / Title:**  
AA0252 / CH-47 Cargo Helicopter Mods  

**ID Code** (A=Service Ready, B=Not Service Ready) :  

**MDAP/MAIS Code:**  

**Modification Item 2 of 10:** Block I Software Safety & Avionics Upgrades  

**Manufacturer Information**  

Manufacturer Name: TBD  
Manufacturer Location: TBD  

Administrative Leadtime *(in Months)*:  
Production Leadtime *(in Months)*:  

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**Installation Information**  

**Method of Implementation (Organic):** TBD  

**Installation Quantity:** 0  

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LI 3264AA0252 - CH-47 Cargo Helicopter Mods (MYP)  

**UNCLASSIFIED**  

**Date:** March 2019  

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Army  

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P-1 Line #23
### Installation Information

**Method of Implementation:** Various

#### Installation Schedule

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**Installation Schedule:**

- **FY 2018:** Various
- **FY 2019:** Various
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- **FY 2022:** Various
- **FY 2023:** Various
- **FY 2024:** Various

**Total:** Various
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)

Modification Number / Title: AA0252 / CH-47 Cargo Helicopter Mods

ID Code (A=Service Ready, B=Not Service Ready) :

MDAP/MAIS Code: 

Modification Item 4 of 10: Block I Cargo Platform Health Environment (CPHE)

Manufacturer Information

Manufacturer Name: Boeing
Manufacturer Location: Ridley Park, PA
Administrative Leadtime (in Months): 3
Production Leadtime (in Months): 6

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<td>0 / 0.000</td>
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Installation Schedule

<table>
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<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
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<td>Out</td>
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</table>

LI 3264AA0252 - CH-47 Cargo Helicopter Mods (MYP)

UNCLASSIFIED

Page 12 of 18

P-1 Line #23

155
**Exhibit P-3a, Individual Modification:** PB 2020 Army  

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 02 / 10

**P-1 Line Item Number / Title:**  
3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)

**Modification Number / Title:**  
AA0252 / CH-47 Cargo Helicopter Mods

**ID Code (A=Service Ready, B=Not Service Ready):**

**Modification Item 5 of 10:** Improved Troop Seats (ITS)

**Manufacturer Information**

- **Manufacturer Name:** Boeing  
- **Manufacturer Location:** Ridley Park, PA

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<th>FY 2018</th>
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<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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</table>

**Installation Information**

- **Method of Implementation (Organic):** Various  
- **Installation Quantity:** 0

**Date:** March 2019
### Exhibit P-3a, Individual Modification: PB 2020 Army

**Date:** March 2019

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<td>3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)</td>
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**ID Code** (A=Service Ready, B=Not Service Ready) :

**MDAP/MAIS Code:**

**Modification Item 6 of 10:** Block I Adjustable Pitch Change Link

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<td>Delivery Dates</td>
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#### Installation Information

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<tr>
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<td>User Installed</td>
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<tr>
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<td>Qty (Each)</td>
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**Installation Schedule**

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<th>FY 2021</th>
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<tbody>
<tr>
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<td>Q2</td>
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**Installations:**
- **In:** 264 (FY 2018), 0 (FY 2019), 0 (FY 2020), 0 (FY 2021), 0 (FY 2022), 0 (FY 2023), 0 (FY 2024), Total: 264
- **Out:** 264 (FY 2018), 0 (FY 2019), 0 (FY 2020), 0 (FY 2021), 0 (FY 2022), 0 (FY 2023), 0 (FY 2024), Total: 264
### Modification Item 8 of 10: Block I Engine Improvements

**Manufacturer Information**

- **Manufacturer Name:** Honeywell Inc
- **Manufacturer Location:** Phoenix, AZ
- **Administrative Leadtime (in Months):**
- **Production Leadtime (in Months):**

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<th>FY 2021</th>
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<tr>
<td>Delivery Dates</td>
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**Installation Information**

- **Method of Implementation (Organic):** Various
- **Installation Quantity:** 0
**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 3264AA0252 / CH-47 Cargo Helicopter Mods (MYP)  
**Modification Number / Title:** AA0252 / CH-47 Cargo Helicopter Mods  
**Date:** March 2019

**ID Code** (A=Service Ready, B=Not Service Ready):

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<td>Delivery Dates</td>
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**Installation Information**

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**Manufacturer Information**

- Manufacturer Name: TBD
- Manufacturer Location: TBD

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**Installation Information**

- Method of Implementation (Organic): Various
- Installation Quantity: 0
### Resource Summary

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<tbody>
<tr>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>8.074</td>
<td>5.514</td>
<td>5.573</td>
<td>5.677</td>
<td>0.750</td>
<td>6.427</td>
<td>3.700</td>
<td>3.029</td>
<td>3.089</td>
<td>3.179</td>
<td>Continuing</td>
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<td>Less FY Advance Procurement ($ in Millions)</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>8.074</td>
<td>5.514</td>
<td>5.573</td>
<td>5.677</td>
<td>0.750</td>
<td>6.427</td>
<td>3.700</td>
<td>3.029</td>
<td>3.089</td>
<td>3.179</td>
<td>Continuing</td>
</tr>
<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
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<td>6.427</td>
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<td>3.029</td>
<td>3.089</td>
<td>3.179</td>
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</table>

(Initial Spares, Flyaway Unit Cost, Gross/Weapon System Unit Cost, and Total Obligation Authority have been suppressed for informational purposes.)

### Description:

The RC-12X Guardrail Common Sensor (GRCS) is a fixed-wing, airborne Communications Intelligence (COMINT) and Electronic Intelligence (ELINT) collection and precision targeting location system. GRCS provides a persistent capability to detect, locate and classify/identify high value targets with a relevant degree of timeliness and accuracy. GRCS is assigned to two (2) U.S. Army Intelligence and Security Command (INSCOM) Aerial Exploitation Battalions providing Aerial Intelligence, Surveillance and Reconnaissance (AISR) support to combatant commanders. The Army’s Acquisition Objective/Army’s Procurement Objective is 19 RC-12X; seven (7) fielded to 3rd MI; and seven (7) fielded to the 204th MI, and five (5) trainers within Training and Doctrine Command (TRADOC) and INSCOM.

This funding line supports Army RC-12X aircraft performing the AISR mission. It provides for the following: procurement and associated testing of civil and military aircraft equipment, future integration efforts, and procurement of replacement and spare engines and props. These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in service.

The overall GRCS procurement/modernization efforts are found in the following two lines: AZ2052 Guardrail Payloads (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #21) and A02111 GRCS SEMA MODS (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #24). Separate funding lines support the Army Acquisition Executive’s directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Office for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors.

### Secondary Distribution

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<td>Army</td>
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<td>6.427</td>
<td>3.700</td>
<td>3.029</td>
<td>3.089</td>
<td>3.179</td>
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</table>

(Complete dates have been suppressed for informational purposes. The corresponding budget requests are documented elsewhere.)

### Conclusion:

The RC-12X Guardrail Common Sensor (GRCS) is a critical component of the Army’s intelligence capabilities, providing persistent detection and location of high-value targets. The funding line supports the procurement and testing of aircraft equipment, ensuring continued worldwide deployment capability and safe operations.
Exhibit P-40, Budget Line Item Justification: PB 2020 Army  

Appropriation / Budget Activity / Budget Sub Activity:  
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title:  
3403A02111 / GRCS SEMA Mods (MIP)

Exhibit P-40, Budget Line Item Justification: PB 2020 Army  

ID Code (A=Service Ready, B=Not Service Ready):  

Program Elements for Code B Items: N/A  
Other Related Program Elements: N/A

**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Exhibit P-40, Budget Line Item Justification:**

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**Appropriation / Budget Activity / Budget Sub Activity:**

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Exhibit P-40, Budget Line Item Justification:**

**Appropriation / Budget Activity / Budget Sub Activity:**

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Exhibit P-40, Budget Line Item Justification:**

**Appropriation / Budget Activity / Budget Sub Activity:**

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Exhibit P-40, Budget Line Item Justification:**

**Appropriation / Budget Activity / Budget Sub Activity:**

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Exhibit P-40, Budget Line Item Justification:**

**Appropriation / Budget Activity / Budget Sub Activity:**

**P-1 Line Item Number / Title:**  
3403A02111 / GRCS SEMA Mods (MIP)

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items: N/A**

**Other Related Program Elements: N/A**

**Justification:**

FY20 base procurement funding in the amount of $5.677 million will support RC-12X aircraft modifications to procure and integrate the 1st Phase Assured Position, Navigation and Timing (A-PNT) solutions (Magna-F); Information Assurance support for aircraft systems; and RC-12X modifications in service. This line also funds the integration of ARC 201 Single Channel Ground Air Radio Systems (SINCGARS) kits to address modernization issues, and modifications to the communications suite to address emerging requirements.

FY20 OCO procurement funding in the amount of $.750 million will support the RESET of GRCS aircraft supporting contingency operations.

The P3a quantities, prior through FY19, complete the modifications for GATM for the nineteen (19) GRCS aircraft. FY20 quantities reflect the integration of 1st phase A-PNT (Magna-F).

All COMPO 1. In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 3403A02111 / GRCS SEMA Mods (MIP)
Modification Number / Title: A02111 / Guardrail Common Sensor SEMA Modifications

ID Code (A=Service Ready, B=Not Service Ready):

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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

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Description:
The RC-12X Guardrail Common Sensor (GRCS) is a fixed-wing, airborne Communications Intelligence (COMINT) and Electronic Intelligence (ELINT) collection and precision targeting location system. GRCS provides a persistent capability to detect, locate and classify/identify high value targets with a relevant degree of timeliness and accuracy. GRCS is assigned to two (2) U.S. Army INSCOM Aerial Exploitation Battalions providing Aerial Intelligence, Surveillance and Reconnaissance (AISR) support to combatant commanders. The Army's Acquisition Objective/Army's Procurement Objective is nineteen (19) RC-12X: seven (7) fielded to 3rd MI; seven (7) fielded to the 204th MI, and five (5) trainers within TRADOC and INSCOM.

This funding line supports Army RC-12X aircraft performing the AISR mission. It provides for the following: procurement and associated testing of civil and military aircraft equipment, future integration efforts, and procurement of replacement and spare engines and props. These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in service.
### Modification Type: Unclassified

**Modification Item 1 of 1: Guardrail Common Sensor SEMA Modifications**

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MDAP/MAIS Code: UNCLASSIFIED
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
3403A02111 / GRCS SEMA Mods (MIP)

**Modification Number / Title:**
A02111 / Guardrail Common Sensor SEMA Modifications

**ID Code** (A=Service Ready, B=Not Service Ready)

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**Modification Item 1 of 1:** Guardrail Common Sensor SEMA Modifications

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**Production Leadtime (in Months):** 2

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**Installation Information**

**Method of Implementation:** Guardrail Common Sensor SEMA Modifications

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**Description:**

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 IAW the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV), Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) enabled workstations. ARL-E will be assigned to the U.S. Army Intelligence and Security Command (INSCOM) Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine (9). The Mission Equipment Package (MEP) objective is eight (8).

The funding line supports the conversion of Government Owned Contractor Operated (GOCO) Quick Reaction Capability (QRC) DeHavilland (DHC) 8-315 Aerial Intelligence Surveillance & Reconnaissance aircraft systems, leveraging seven (7) Saturn Arch (SA) and two (2) Desert Owls (DO). It provides for the following: the procurement of replacement and spare engines; procurement and associated testing of civil and military aircraft equipment, and future integration efforts. These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in services which includes Assured Position, Navigation and Timing (A-PNT).

Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne Intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Electronic Warfare, and Sensors. The A02110 ARL SEMA Mods (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #25) budget line provides for aircraft modification and AZ2050 ARL Payloads (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #21) provides for sensors.
### Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**UNCLASSIFIED**

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
3404A02110 / ARL SEMA Mods (MIP)

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**Secondary Distribution**

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

**Total Obligation Authority**
**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10:
Modification of Aircraft

**P-1 Line Item Number / Title:**
3404A02110 / ARL SEMA Mods (MIP)

**ID Code** (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

**Line Item MDAP/MAIS Code:** N/A

### Exhibits Schedule

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<th>MDAP/MAIS Code</th>
<th>Subexhibits</th>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**
The FY20 base procurement funding in the amount of $6.566 million will be utilized to fund the cockpit and Aircraft Survivability Equipment (ASE) integration of one aircraft and continued system verification and fielding. Additionally, provides funding for modifications in service.

FY20 P3a manufacturer name and location are for ASE integration contract only. Manufacturers for FYDP modifications are to be determined.

All COMPO 1 Active. In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
## Description:

Airborne Reconnaissance Low - Enhanced (ARL-E) is a worldwide self-deployable airborne Intelligence Surveillance Reconnaissance (ISR) system designed for timely, accurate, assured support to tactical forces over the full spectrum of operations. This system is a De Havilland DHC-8 aircraft replacing the DHC-7 IAW the Aerial ISR (AISR) 2020 Strategy. ARL-E will enhance the ARL-M sensor capability sets through the procurement of new and refurbished sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. It provides a persistent capability to include: Broad-Area Surveillance and/or Focused Stare on Target Areas of Interest (Point or Objective Targets), Electro-Optical/Infrared (EO/IR)/Full-Motion Video (FMV), Multi-Mode Radar, Robust Communications Intelligence (COMINT), on-Board Collection, Analysis, Sensor Cross Cue and dissemination through Distributed Common Ground System-Army (DCGS-A) enabled workstations. ARL-E will be assigned to the U.S. Army INSCOM Aerial ISR Brigade providing AISR support to combatant commanders. For the overall system, the Army Acquisition Objective and the Army Procurement Objective, is nine (9). The Mission Equipment Package (MEP) objective is eight (8).

The funding line supports the conversion of Government Owned Contractor Operated (GOCO) Quick Reaction Capability (QRC) DeHavilland DHC-8-315 Aerial Intelligence Surveillance & Reconnaissance aircraft systems, leveraging seven (7) Saturn Arch (SA) and two (2) Desert Owls (DO). It provides for the following: the procurement of replacement and spare engines; procurement and associated testing of civil and military aircraft equipment, and future integration efforts. These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in services which includes Assured Position, Navigation and Timing (A-PNT).

### Resource Summary

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(Initial Spares ($ in Millions)

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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)
### Models of Systems Affected: ARL SEMA Modifications

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<th>Modification Item 1 of 1: ARL SEMA Mods</th>
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<tbody>
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<td>A Kits</td>
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#### Procurement

**Modification Item 1 of 1: ARL SEMA Mods**

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#### Installation

**Modification Item 1 of 1: ARL SEMA Mods**

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**UNCLASSIFIED**

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 3404A02110 / ARL SEMA Mods (MIP)

Modification Number / Title: A02110 / ARL SEMA Modifications

Date: March 2019
### Installation Information

**Method of Implementation:** ARL SEMA Mods

**Installation Schedule**

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</table>
The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's newest generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS is assigned to the United States Army Training and Doctrine Command (TRADOC) in support of training at the US Army Intelligence Center of Excellence (USAICoE). The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT). Congressional Plus-up for up to two (2) EMARSS-E aircraft.

The budget line supports the conversion of Special Electronic Mission Aircraft (SEMA) Government-owned Quick Reaction Capability (QRC) Aerial Intelligence Surveillance & Reconnaissance (AISR) systems: Liberty Project Aircraft (LPA), Constant Hawk (CH) and Tactical Operations (TACOP), VaDER (Vehicle and Dismount exploitation Radar) into Enhanced Medium Altitude Reconnaissance and Surveillance Systems (EMARSS) Capabilities Production Document (CPD) compliant systems. It provides for the following: the procurement of replacement and spare engines; procurement and associated testing of civil and military aircraft equipment; and integration/installation of ISR Mission Equipment Package (MEP). These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in service.

The overall EMARSS procurement/modernization efforts are found in the following two lines; AZ2054 EMARSS Payloads (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #21) line provides for sensors and A02112 EMARSS SEMA Mods (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #26) provides for aircraft modifications. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Warfare, and Sensors.

**Resource Summary**

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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>83.066</td>
<td>51.279</td>
<td>60.248</td>
<td>3.859</td>
<td>22.180</td>
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<td>2.374</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Description:**

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's newest generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS is assigned to the United States Army Training and Doctrine Command (TRADOC) in support of training at the US Army Intelligence Center of Excellence (USAICoE). The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT). Congressional Plus-up for up to two (2) EMARSS-E aircraft.

The budget line supports the conversion of Special Electronic Mission Aircraft (SEMA) Government-owned Quick Reaction Capability (QRC) Aerial Intelligence Surveillance & Reconnaissance (AISR) systems: Liberty Project Aircraft (LPA), Constant Hawk (CH) and Tactical Operations (TACOP), VaDER (Vehicle and Dismount exploitation Radar) into Enhanced Medium Altitude Reconnaissance and Surveillance Systems (EMARSS) Capabilities Production Document (CPD) compliant systems. It provides for the following: the procurement of replacement and spare engines; procurement and associated testing of civil and military aircraft equipment; and integration/installation of ISR Mission Equipment Package (MEP). These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in service.

The overall EMARSS procurement/modernization efforts are found in the following two lines; AZ2054 EMARSS Payloads (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #21) line provides for sensors and A02112 EMARSS SEMA Mods (Aircraft Procurement Army (APA) Military Intelligence Program (MIP) P-1 Line #26) provides for aircraft modifications. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation; and overall sensor, processing, exploitation, and dissemination responsibilities to Program Executive Officer for Intelligence, Warfare, and Sensors.
Exhibit P-40, Budget Line Item Justification: PB 2020 Army  
Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title:
3405A02112 / EMARSS SEMA Mods (MIP)

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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<tr>
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<td>1.903</td>
<td>1.940</td>
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</table>
## Justification:

FY20 Base Procurement dollars in the amount of $3.859 million supports modifications in service, such as the procurement of Mission Enhancement Kits (MEK). Mission Enhancement kits include PT6A-67A engines, light weight composite propellers, light weight lithium ion batteries and anti-lock braking system which are designed to increase endurance, increase safety, and reduce risk in the extreme environmental conditions of high altitude combined with hot temperature conditions. Mission Enhancement Kits will increase operational capability by allowing the aircraft to carry more fuel, which equates to more time on station. Modifications in service also include modernized avionics, such as Assured Position, Navigation and Timing (A-PNT), cockpit management unit, Blue Force Tracking-Aviation (BFT-AVN) to BFT-2 conversion, APX-123 Transponder to APX-119 Transponder and Aircraft Survivability Equipment (ASE) integration.

FY20 OCO Procurement dollars in the amount of $22.180 million supports the procurement of Mission Enhancement Kits and the RESET of EMARSS aircraft.

Per Army Directed Requirement, the FY19 Congressional Plus-up of $39.800 million authorizes the Army to modify up to 2 (two) EMARSS-E aircraft.

P3a quantities prior through FY18 are for aircraft integration. Starting FY19, quantities are for modifications in service to previously delivered aircraft.

P3a manufacturer name and location are for aircraft integration contract only. Modifications in service contracts are to be determined.

All COMPO 1 Active. In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) is the Army's newest generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. It provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS is assigned to the U.S. Army Intelligence and Security Command's Aerial Exploitation Battalions, providing Aerial Intelligence, Surveillance and Reconnaissance support to combatant commanders. EMARSS is also assigned to the United States Army Training and Doctrine Command (TRADOC) in support of training at the US Army Intelligence Center of Excellence (USAICoE). The Army Acquisition Objective for EMARSS is 36 systems, with an Army Procurement Objective of 24, to include the following variants: eight (8) EMARSS-G (Geo-INT); four (4) EMARSS-V (Vehicle and Dismount Exploitation Radar, VaDER); eight (8) EMARSS-M (Multi-INT); and four (4) EMARSS-S (SIGINT). Congressional Plus-up for up to two (2) EMARSS-E aircraft.

The budget line supports the conversion of Special Electronic Mission Aircraft (SEMA) Government-owned Quick Reaction Capability (QRC) Aerial Intelligence Surveillance & Reconnaissance (AISR) systems: Liberty Project Aircraft (LPA), Constant Hawk (CH) and Tactical Operations (TACOP), VaDER (Vehicle and Dismount Exploitation Radar) into Enhanced Medium Altitude Reconnaissance and Surveillance Systems (EMARSS) Capabilities Production Document (CPD) compliant systems. It provides for the following: the procurement of replacement and spare engines; procurement and associated testing of civil and military aircraft equipment; and integration/installation of ISR Mission Equipment Package (MEP). These modifications address all Department of Defense (DoD) mandated safety equipment to current and evolving international and Army Standards. These modifications ensure continued worldwide deployment capability and safe operations. Lastly, this line supports future modifications in service.

The APO quantity of 24 is funded as follows: Aerial Common Sensor (ACS) (MIP) (A02005) FY14-FY16 modified 16. EMARSS SEMA Mods (MIP) (A02112) and EMARSS Payloads (MIP) (AZ2054) FY17-FY18, will modify the remaining 8.

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### Models of Systems Affected: EMARSS

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### Procurement

**Modification Item 1 of 1: EMARSS SEMA Modifications**

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<tr>
<td>RE/I</td>
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**EMARSS-E Pods**

- Total Cost: 1.903

**RESET**

- Total Cost: 2.664

**EMARSS Performance Enhancements**

- Total Cost: 4.377

**PMO and SETA Support**

- Total Cost: 2.664

**Initial Spares**

- Total Cost: 4.377

**Testing**

- Total Cost: 2.664

**Subtotal: Recurring**

- Total Cost: 2.664

**Subtotal: EMARSS SEMA Modifications**

- Total Cost: 4.377

**Subtotal: Procurement, All Modification Items**

- Total Cost: 4.377

### Installation

**Modification Item 1 of 1: EMARSS SEMA Modifications**

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<th>Type</th>
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<tr>
<td>6/50.623</td>
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**Subtotal: Installation**

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<tbody>
<tr>
<td>6/50.623</td>
<td>4.48.615</td>
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**Total**

| Total Cost (Procurement + Support + Installation) | 83.066 |

---

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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 3405A02112 / EMARSS SEMA Mods (MIP)

Modification Number / Title: A02112 / EMARSS SEMA Modifications

ID Code (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

UNCLASSIFIED
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<th>FY 2021</th>
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UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title: 4194AA0270 / Utility/Cargo Airplane Mods

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Date: March 2019

Description:
The budget line supports the updates and modernization of Army Fixed Wing Aircraft communication, navigation, surveillance, survivability equipment, and Department of Defense (DoD) mandated safety equipment to current and evolving international and Army standards. The budget line provides for the procurement of replacement and spare engines for Fixed Wing Aircraft. In addition, it provides for the procurement and associated testing of civil and military aircraft modification equipment. This budget line will also be used to modify Fixed Wing Aircraft to include Engineer, Furnish and Install (EF&I) of modifications as a complete contractual effort. It also leverages Federal Aviation Administration (FAA) supplemental type certificates (STC) that are already in existence and applies STCs to aircraft modifications. These modifications ensure continued worldwide deployment capability and safe operations. This Procurement line funds aircraft modifications for all three (3) Compos; Active, Army National Guard, and Army Reserve.

Average unit cost is variable and dependent upon aircraft selection and requirements.

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
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<th>FY 2019</th>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
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(Initial Spares ($ in Millions) N/A)
(Flyaway Unit Cost ($ in Thousands) N/A)
(Gross/Weapon System Unit Cost ($ in Thousands) N/A)

(continued)

Secondary Distribution

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</table>
### Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
4194AA0270 / Utility/Cargo Airplane Mods

**ID Code** *(A=Service Ready, B=Not Service Ready):*
Program Elements for Code B Items: N/A

**Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

#### Exhibits Schedule

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<tr>
<th>Exhibit Type</th>
<th>Title*</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
</tr>
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<tbody>
<tr>
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<td>AA0270 / Fixed Wing Aircraft Modifications (Rationalization, Standardization, Interoperability, Compatibility, Simplification)</td>
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<td>57.737</td>
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<td>8.362</td>
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#### Exhibits Schedule

<table>
<thead>
<tr>
<th>Exhibit Type</th>
<th>Title*</th>
<th>Prior Years</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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</tbody>
</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

#### Justification:

FY 2020 Base procurement dollars in the amount of $15.476 million supports aircraft modifications to Communications, Navigation, and Surveillance (CNS), Aircraft Survivability Equipment (ASE), and future modifications in service that meets current and future air traffic management requirements.

In addition, equipment included in the modifications will enhance the safety of passengers and crew. The upgrades will also permit the Army Fixed Wing Aircraft to operate in compliance with other existing and emerging regulations. As requirement for new avionics equipment continue, aircraft delays and airspace exclusions are likely for aircraft not properly equipped. Upgrade of communication and navigation systems will enhance reliability and maintainability, thereby improving aircraft availability for mission requirements. The associated aircraft modifications will assure worldwide deployability for those required to deploy. This Procurement line funds aircraft modifications for all three (3) Comps; Active, Army National Guard, and Army Reserve.

FY 2020 OCO procurement dollars in the amount of $8.362 million supports the Fixed Wing Aircraft in support of Contingency Operations. The modifications will include Communications, Navigation and Surveillance (CNS) and Aircraft Survivability Equipment (ASE).

#### Comments:

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
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**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 4194AA0270 / Utility/Cargo Airplane Mods

**Modification Number / Title:** AA0270 / Fixed Wing Aircraft Modifications

---

**Resource Summary**

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<th>FY 2020 OCO</th>
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<th>FY 2024</th>
<th>To Complete</th>
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</thead>
<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
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<td>Less PY Advance Procurement ($ in Millions)</td>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Initial Spares ($ in Millions)** | - | - | - | - | - | - | - | - | - | - | - |

**Gross/Weapon System Unit Cost ($ in Thousands)** | - | - | - | - | - | - | - | - | - | - | - |

---

**Description:**

The budget line supports the updates and modernization of Army Fixed Wing Aircraft communication, navigation, surveillance, survivability equipment, and Department of Defense (DoD) mandated safety equipment to current and evolving international and Army standards. The budget line provides for the procurement of replacement and spare engines for fixed wing aircraft. In addition, it provides for the procurement and associated testing of civil and military aircraft modification equipment. This budget line will also be used to modify fixed wing aircraft to include Engineer, Furnish and Install (EF&I) of modifications as a complete contractual effort. It also leverages Federal Aviation Administration (FAA) supplemental type certificates (STC) that are already in existence and applies STCs to aircraft modifications. These modifications ensure continued worldwide deployment capability and safe operations. This Procurement line funds aircraft modifications for all three (3) Compos; Active, Army National Guard, and Army Reserve.

Average unit cost on the P3a are variable and dependent upon aircraft selection and requirements.

---

**Secondary Distribution**

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LI 4194AA0270 - Utility/Cargo Airplane Mods

**UNCLASSIFIED**

Page 3 of 5

P-1 Line #27
### Models of Systems Affected: All series Army fixed wing aircraft

### Modification Type: Rationalization, Standardization, Interoperability, Compatibility, Simplification

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#### Procurement

- **Modification Item 1 of 1: Fixed Wing Aircraft Modifications**
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  - Recurring
    - Installation Kits
    - Data
    - Program Management
    - Subtotal: Recurring
    - Subtotal: Fixed Wing Aircraft Modifications
    - Subtotal: Procurement, All Modification Items

#### Installation

- **Modification Item 1 of 1: Fixed Wing Aircraft Modifications**
  - Recurring
    - Installation

#### Total

- **Total Cost (Procurement + Support + Installation)**

---

LI 4194AA0270 - Utility/Cargo Airplane Mods

**UNCLASSIFIED**

Page 4 of 5

P-1 Line #27

Date: March 2019
### Installation Information

#### Method of Implementation: Contractor

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In: 271 / 121.413, Out: 269 / 121.413

**Army**

LI 4194AA0270 - Utility/Cargo Airplane Mods

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Page 5 of 5
Utility Helicopter Mods include modifications to the UH-60 Black Hawk and the UH-72A Lakota helicopters. The UH-60 Black Hawk helicopter is the Army's utility helicopter for the near and midterm force. It is a twin engine, single rotor, four bladed utility helicopter used for air assault, general support, command & control, and aero-medical evacuations (MEDEVAC). The UH-60 is joint force capable, providing 24 hour/day support including operations at night and in adverse weather conditions. The UH-60 is designed to carry a crew of four plus eleven combat equipped troops or an external load up to 9,000 pounds. The UH-60 Black Hawk was fielded in 1978 as a replacement for the UH-1. From 1978 to 1988, UH-60As were produced. In 1989 production of UH-60Ls with improved engines and drive train began. In 2007, full rate production of UH-60Ms began which provided a digital cockpit, digital Flight Management System (FMS), improved engine, and wide-cord main rotor blades. The UH-72A Lakota helicopter provides general aviation support for aviation units in the active and reserve components.
### Exhibit P-40, Budget Line Item Justification:

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
6949AA0480 / Utility Helicopter Mods

**Justification:**
FY20 Base Procurement dollars in the amount of $6.744 million will install Electronic Standby Instrument Systems (ESIS). ESIS functions include: Attitude Indication, Slip/Skid Indication, Airspeed, Heading, Altitude, and Vertical Speed. The system consists of the GH-4001 Backup Attitude Indicator (BAI), MAG-3000 Magnetometer, and Emergency Power Supply. To offset the effects of a dual Attitude Heading Reference Unit (AHRU) failure, installation of a BAI is required to provide attitude information to the pilots in the event a single/dual Fiber Optic Gyro (FOG) failure occurs. The GH-4001 serves as the best long-term solution to the fleet. In order to comply with Army SOF H-60-13-SOF-1, the UH-60A/L is required to have Electronic Standby Instrument System (ESIS) along with dual Attitude Heading Reference System (AHRS).

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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 6949AA0480 / Utility Helicopter Mods
Modification Number / Title: AA0492 / Utility Helicopter Modifications

ID Code (A=Service Ready, B=Not Service Ready):

**Resource Summary**

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<td>50.709</td>
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(Initial Spares ($ in Millions)

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**Description:**

Utility Helicopter Mods include modifications to the UH-60 Black Hawk and the UH-72A Lakota helicopter.

FY20 Base Procurement dollars in the amount of $6.744 million will install Electronic Standby Instrument Systems (ESIS). ESIS functions include: Attitude Indication, Slip/Skid Indication, Airspeed, Heading, Altitude, and Vertical Speed. The system consists of the GH-4001 Backup Attitude Indicator (BAI), MAG-3000 Magnetometer, and Emergency Power Supply. To offset the effects of a dual Attitude Heading Reference Unit (AHRU) failure, installation of a BAI is required to provide attitude information to the pilots in the event a single/dual Fiber Optic Gyro (FOG) failure occurs. The GH-4001 serves as the best long-term solution to the fleet. In order to comply with Army SOF H-60-13-SOF-1, the UH-60A/L is required to have Electronic Standby Instrument System (ESIS) along with dual Attitude Heading Reference System (AHRS).
### Models of Systems Affected: UH-60L

#### Financial Plan

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Modification Type</th>
<th>Related RDT&amp;E PEs:</th>
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<tbody>
<tr>
<td>A Kits</td>
<td>Operational</td>
<td></td>
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</table>

#### Modification Item 1 of 12: UH-60A to UH-60L Conversion

- **A Kits**
- **Recurring**
  - Other: 276 / 375.248
  - Subtotal: Recurring: 276 / 375.248
- **Non-Recurring**
  - Subtotal: Non-Recurring: 970.656
  - Subtotal: UH-60A to UH-60L Conversion: 276 / 1,345.904

#### Modification Item 2 of 12: External High Speed Hoist

- **A Kits**
- **Recurring**
  - Other: 285 / 82.321
  - Subtotal: Recurring: 285 / 82.321
- **Non-Recurring**
  - Subtotal: External High Speed Hoist: 285 / 82.321

#### Modification Item 3 of 12: Upturned Exhaust System (UES)

- **A Kits**
- **Non-Recurring**
  - Subtotal: Upturned Exhaust System (UES): 1,000
- **Modification Item 4 of 12: Backup Attitude Indicators**
  - **A Kits**
  - **Recurring**
    - Kit Quantity: 265 / 14.000
    - Subtotal: Recurring: 265 / 14.000
  - **Subtotal: Backup Attitude Indicators**
    - 265 / 14.000

#### Modification Item 5 of 12: Crashworthy External Fuel System (CEFS)

- **A Kits**
  - **Modification Item 5 of 12: Crashworthy External Fuel System (CEFS)**

All costs are in ($M) except for quantities in (Each).
# Utility Helicopter Modifications

## Models of Systems Affected: UH-60L

### Modification Type: Operational

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<th>FY 2020</th>
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**Modification Item 6 of 12: Engine Inlet Barrier Filter (EIBF)**

| A Kits         | Recurring | EIBF A-Kit | - / - | - / - | - / - | - / - | - / - | - / - | - / - | 30 / 0.840 |
| Subtotal: Recurring | - / - | 30 / 0.840 | - / - |

| B Kits         | Recurring | EIBF B-Kit | - / - | - / - | - / - | - / - | - / - | - / - | - / - | 50 / 5,500 |
| Subtotal: Recurring | - / - | 50 / 5,500 | - / - |

**Modification Item 7 of 12: Enhanced Ballistic Armor Protection System (EBAPS)**

| Other          | - / 5,000 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / 15,000 |
| Subtotal: Recurring | - / 5,000 | 148 / 10.640 | 130 / 10.000 |

**Modification Item 8 of 12: UH-72 Sustainability Improvements**

| A Kits         | Non-Recurring | Enhanced Ballistic Armor Protection System (EBAPS) | - / 5,000 | 148 / 10.640 | 130 / 10.000 | - / - | - / - | - / - | - / - | 278 / 25,640 |

### Related RDT&E PEs:

- FY 2020: 0.000
- FY 2021: 0.000
- FY 2022: 0.000
- FY 2023: 0.000
- FY 2024: 0.000

### Total Cost

- FY 2020: 1,295
- FY 2021: 0.000
- FY 2022: 0.000
- FY 2023: 0.000
- FY 2024: 0.000

- Total Cost: 1,295
- Total Cost: 1,295

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## Exhibit P-3a, Individual Modification:

**PB 2020 Army**

### Appropriation / Budget Activity / Budget Sub Activity:

- **2031A / 02 / 10**

### P-1 Line Item Number / Title:

- **LI 6949AA0480 - Utility Helicopter Mods**

### Modification Number / Title:

- **AA0492 / Utility Helicopter Modifications**

### Modification Type: Operational

#### Related RDT&E PEs:

---

## Models of Systems Affected: UH-60L

### Financial Plan

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**Modification Item 9 of 12:**

**UH-60M Weight Reduction - Tail Rotor System Design**

- **A Kits**

  **Non-Recurring**

  - **UH-60M Weight Reduction Tail Rotor Desig**
    - Qty (Each): - 1
    - Total Cost: $16.000

  **Subtotal: Non-Recurring**

  - Qty (Each): - / /
  - Total Cost: $16.000

- **B Kits**

  **Recurring**

  - **B Kit Recurring**
    - Qty (Each): - 26 / 4.804
    - Total Cost: $26 / 4.804

  **Subtotal: B Kit Recurring**

  - Qty (Each): - / /
  - Total Cost: $26 / 4.804

**Modification Item 10 of 12:**

**Electronic Standby Instrument System (ESIS)**

- **A Kits**

  **Recurring**

  - **A Kit Recurring**
    - Qty (Each): - 33 / 4.877
    - Total Cost: $33 / 4.877

  **Subtotal: Recurring**

  - Qty (Each): - / /
  - Total Cost: $33 / 4.877

- **B Kits**

  **Recurring**

  - **B Kit Recurring**
    - Qty (Each): - 26 / 4.804
    - Total Cost: $26 / 4.804

  **Subtotal: Electronic Standby Instrument System (ESIS)**

  - Qty (Each): - / /
  - Total Cost: $26 / 4.804

**Modification Item 11 of 12:**

**Generators 60 kVA**

- **B Kits**

  **Recurring**

  - **Generator B-Kits**
    - Qty (Each): - 90 / 12.615
    - Total Cost: $90 / 12.615

  **Subtotal: Recurring**

  - Qty (Each): - / /
  - Total Cost: $90 / 12.615

**Modification Item 12 of 12:**

**Upturned Exhaust System II (UES II)**

- **B Kits**

  **Recurring**

  - **UES II**
    - Qty (Each): - 90 / 12.615
    - Total Cost: $90 / 12.615

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**LI 6949AA0480 - Utility Helicopter Mods**

**UNCLASSIFIED**

**Army**

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**P-1 Line #28**

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**LI 6949AA0480 - Utility Helicopter Mods**

**UNCLASSIFIED**

**Army**

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**P-1 Line #28**

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**LI 6949AA0480 - Utility Helicopter Mods**

**UNCLASSIFIED**

**Army**

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**P-1 Line #28**

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**LI 6949AA0480 - Utility Helicopter Mods**

**UNCLASSIFIED**

**Army**

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**P-1 Line #28**

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**LI 6949AA0480 - Utility Helicopter Mods**

**UNCLASSIFIED**

**Army**

**Page 6 of 19**

**P-1 Line #28**
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

P-1 Line Item Number / Title: 6949AA0480 / Utility Helicopter Mods

Modification Number / Title: AA0492 / Utility Helicopter Modifications

ID Code (A=Service Ready, B=Not Service Ready) :

MDAP/MAIS Code:

Models of Systems Affected: UH-60L

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<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<td>Subtotal: Installation</td>
<td>431 / 6.279</td>
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| Total | Total Cost (Procurement + Support + Installation) | 1,592.796 | 50.709 | 32.443 | 6.744 | 6.744 | 25.868 | 34.384 | 34.996 | 35.178 | - | 1,813.118 |

LI 6949AA0480 - Utility Helicopter Mods

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Page 7 of 19

P-1 Line #28
### Modification Item 1 of 12: UH-60A to UH-60L Conversion

#### Manufacturer Information

- **Manufacturer Name:** Corpus Christi Army Depot  
- **Manufacturer Location:** Corpus Christi Army Depot

#### Installation Information

- **Method of Implementation:** Depot

#### Installation Schedule

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**Army Acquisition**

**LI 6949AA0480 - Utility Helicopter Mods**

**Modification Number / Title:**
AA0492 / Utility Helicopter Modifications

**ID Code** (A=Service Ready, B=Not Service Ready)

**MDAP/MAIS Code:**

**Modification Item 2 of 12:** External High Speed Hoist

**Manufacturer Information**

Manufacturer Name: Breeze Eastern, Inc
Manufacturer Location: Whippany, NJ

**Administrative Leadtime (in Months):**

**Production Leadtime (in Months):**

**Dates**

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<th>FY 2021</th>
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**Installation Information**

**Method of Implementation:** Organic

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**Installation Schedule**

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## Army LI 6949AA0480 - Utility Helicopter Mods

### P-1 Line Item Number / Title:
6949AA0480 / Utility Helicopter Mods

### Modification Number / Title:
AA0492 / Utility Helicopter Modifications

#### ID Code
(A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

### Modification Item 3 of 12: Upturned Exhaust System (UES)

#### Installation Information

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UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army
Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 6949AA0480 / Utility Helicopter Mods
Modification Number / Title: AA0492 / Utility Helicopter Modifications

ID Code (A=Service Ready, B=Not Service Ready) : 
MDAP/MAIS Code: 
Modification Item 4 of 12: Backup Altitude Indicators

Manufacturer Information
Manufacturer Name: PIF
Manufacturer Location: Redstone Arsenal Alabama

Administrative Leadtime (in Months):

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<th>FY 2020</th>
<th>FY 2021</th>
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Production Leadtime (in Months):

Method of Implementation: Organic

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LI 6949AA0480 - Utility Helicopter Mods
Army
UNCLASSIFIED
Page 11 of 19
P-1 Line #28
194
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Modification Number / Title:** AA0492 / Utility Helicopter Modifications  
**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 6949AA0480 / Utility Helicopter Mods  
**Date:** March 2019

**Modification Item 5 of 12:** Crashworthy External Fuel System (CEFS)

**Manufacturer Information**
- **Manufacturer Name:** Robertson Fuel Systems, LLC  
- **Manufacturer Location:** Tempe, AZ

**Installation Information**

**Method of Implementation:** Organic

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**Modification Item 6 of 12**: Engine Inlet Barrier Filter (EIBF)

**Manufacturer Information**

- **Manufacturer Name**: Donaldson Aerospace & Defense
- **Manufacturer Location**: St Louis MO

**Administrative Leadtime** (in Months): 1

**Production Leadtime** (in Months): 12

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**Installation Information**

**Method of Implementation**: Various

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### Modification Information

**Modification Item 7 of 12:** Enhanced Ballistic Armor Protection System (EBAPS)

#### Manufacturer Information
- **Manufacturer Name:** LSF FY18 TPG FY19-20
- **Manufacturer Location:** Miami Lakes, Florida

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#### Production Leadtime (in Months):

- Manufacturer Location: Miami Lakes, Florida

### Installation Information

#### Method of Implementation: Organic

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**LI 6949AA0480 - Utility Helicopter Mods**

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Page 14 of 19

P-1 Line #28
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 6949AA0480 / Utility Helicopter Mods

**Modification Number / Title:** AA0492 / Utility Helicopter Modifications

**ID Code** (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

**Modification Item 8 of 12:** UH-72 Sustainability Improvements

### Manufacturer Information
- **Manufacturer Name:** Undetermined
- **Manufacturer Location:** Undetermined

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**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 6949AA0480 / Utility Helicopter Mods

**Modification Number / Title:** AA0492 / Utility Helicopter Modifications

**ID Code** (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

**Modification Item 10 of 12:** Electronic Standby Instrument System (ESIS)

**Manufacturer Information**

- **Manufacturer Name:** L-3
- **Manufacturer Location:** Grand Rapids MI
- **Administrative Leadtime (in Months):** 6
- **Production Leadtime (in Months):** 12

**Installation Information**

**Method of Implementation:** Various

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**Total Cost**

- FY 2018: 0.000
- FY 2019: 80 / 6.292
- FY 2020: 82 / 6.443
- FY 2021: 84 / 6.744
- FY 2022: 62 / 5.074
- FY 2023: 62 / 5.074
- FY 2024: 62 / 5.074
- Total: 370 / 29.832

### Installation Schedule

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**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 6949AA0480 / Utility Helicopter Mods

**Modification Number / Title:** AA0492 / Utility Helicopter Modifications

**Method of Implementation:** Various

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**Manufacturer Location:** Undetermined

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**Installation Cost**

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**Dates:**

- **Contract Dates:** Mar 2021, Mar 2022, Mar 2024, Mar 2025
- **Delivery Dates:** Mar 2022, Mar 2023, Mar 2025
The Network and Mission Plan budget line includes the Aviation Mission Planning System (AMPS), the Improved Data Modem (IDM), the Aviation Data Exploitation Capability (ADEC), and the Aircraft Notebook (ACN).

The AMPS provides automated mission planning, risk assessment and transfer of mission data to Army Aviation platforms in support of Mission Command functions within Aviation units. The AMPS system supports pre-mission planning and rehearsal, including route planning, communications planning, and aircraft configuration. AMPS has the ability to generate mission data in either hard copy or electronic formats. The electronic formats are loaded onto the aircraft platforms utilizing a Data Transfer Device initializing the communication, navigation, and weapons systems on the aircraft. Supported aircraft include the AH-64D/E, CH-47F, UH-60L/M/Q, and HH-60M, and also Handheld applications. Support for the Enhanced Medium Altitude Reconnaissance Surveillance System (EMARSS), UH-60V, AH-64E V6, and Unmanned Aircraft Systems (UAS) in the U.S. baseline will be provided in a future release. The AMPS supports Fixed Wing aircraft with Take Off Landing Distance calculators, AH-64 aircraft with a mobile Maintenance Test Flight Calculator and Army Rotary Wing aircraft with Integrated Performance Aircraft Configuration Tool/Flight Performance Models for performance and Weight and Balance planning. The AMPS program includes management of the Commander's Aviation Risk Tool and the Centralized Aviation Flight Records System (CAFRS). The AMPS hardware is replaced after five years of use to accommodate rapid commercial technology changes. The AMPS program manages and supports FliteScene Software licenses, maintenance agreements, and related engineering services. FliteScene is a digital map technology application that provides enhanced navigation capabilities to the military flight crew. FliteScene Digital Map is a high performance, combat proven, digital map software product. FliteScene Digital Map software forward-looking capabilities enhance mission effectiveness and include presentation of weather, contour lines, slope shading, dynamic elevation banding, threat depiction, variable scaling, and symbology overlays.

The IDM is the common solution for digitizing Army Aviation and is fielded on every modernized, rotary-wing Army aircraft, including the CH-47 Chinook, AH-64 Apache and UH-60 Black Hawk. The IDM provides the Army rotary-wing fleet with critical communication capabilities, performing as an internet controller and gateway to the Tactical Internet and Fire Support Internet. The IDM facilitates connectivity to multiple radios used by rotary-wing aircraft and the Blue Force Tracker transceiver, as well as providing the means for rapid data transfer. This hardware/software solution also provides a flexible, software-driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Joint Variable Message Format messages capability to the cockpit and is critical to the flight operations of the AH-64D/E, CH-47F and UH/HH-60M/V fleets. The IDM hardware production is critical to the overall readiness of supported Army Aviation Platforms. The Multi-Core Processor-501 modification will be a technology replacement for the current Army IDM-401 and become a core component to support a Digital Backbone for Army rotary wing aircraft.

The ADEC is an Army aviation program providing capabilities needed at the aviation unit level to implement and support improvements within aviation operations, safety, and training to increase operational effectiveness and situational awareness at all command echelons. ADEC provides a common and interoperable capability required to implement the DoD mandated Military Flight Operations Quality Assurance
processes. ADEC will standardize flight scheduling/management, risk management, mission approval, and flight data analysis and visualization. ADEC provides interfaces to CAFRS to reduce data entry and information technology footprint while enabling disconnected and split based operations. ADEC hardware architecture will provide a server infrastructure for residency of multiple critical army aviation programs such as Global Combat Support System - Army (GCSS-A), ACN and CAFRS. Army Aviation platforms are dependent upon ADEC as a host to enable a centralized architecture to support aviation critical mission operations.

The ACN is an Army Aviation program required for the completion of aviation maintenance activities and the documentation required to maintain airworthiness for all Army aircraft. ACN implements The Army Maintenance Management System - Aviation policy and procedures and integrates with CAFRS, GCSS-A, Maintenance Consolidated Database System, and Enterprise Materiel Status Reporting to reduce manual entries and increase data accuracy. ACN reduces the information technology footprint within an aviation unit by integrating multiple software applications such as the interactive electronic technical manuals, platform software applications and condition based maintenance plus tools onto a multi-purpose hardware platform. ACN provides its data to the Consolidated Aviation Maintenance Management system to provide a fleet and higher echelon view of material status and manage non-standard supply actions. The ACN is being fielded to all Army Aviation units, Rotary-wing, Fixed-wing and Unmanned Aircraft System equipped units. ACN will completely replace the Unit Level Logistics System - Aviation (Enhanced) and Unmanned Aircraft Systems - Initiative systems currently in use by the end of FY19.

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

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### Justification:

FY 2020 Base procurement dollars in the amount of $15.903 million supports AMPS software revisions necessary for aviation fleet modernization programs in support of Army Aviation's 27 aircraft variants. Maintains interoperability and commonality with Army Mission Command initiatives.

FY 2020 Base procurement dollars in the amount of $82.024 million supports the procurement of IDM-401 kits to upgrade the fleet from the IDM-304 and IDM-304B variants and to provide a technology refresh to the IDM hardware. The funding will also address modifications to the IDM application software and the host computing environment to support an open systems approach to integration of application software which will drive down software costs. The funding will maintain compliance with cybersecurity, and changes to the functionality of the IDM application in support of Army Networking initiatives for new radios and mission command modernization. These kits support production line and modification work order installations for the AH-64D/E, CH-47F and HH/UH-60M/V helicopters.

FY 2020 Base procurement dollars in the amount of $7.525 million supports the procurement of software and software licenses and completes the fielding and training of ACN systems for Army Aviation fixed-wing units, upgrading of ACN software, and staffing of a 24 hour Help Desk.

FY 2020 OCO procurement dollars in the amount of $0.010 million supports unit fielding and training in Europe in order to provide Aviation Mission Planning System.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 8658AA0712 / Network And Mission Plan
Modification Number / Title: AA0712 / Network and Mission Plan

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<td>105.452</td>
<td>77.687</td>
<td>42.617</td>
<td>50.718</td>
<td>43.510</td>
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<td>132.402</td>
<td>118.614</td>
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<td>105.452</td>
<td>77.687</td>
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<td>50.718</td>
<td>43.510</td>
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Initial Spares ($ in Millions)
Gross/Weapon System Unit Cost ($ in Thousands)

Description:
The Network and Mission Plan budget line includes the Aviation Mission Planning System (AMPS), the Improved Data Modem (IDM), the Aviation Data Exploitation Capability (ADEC), and the Aircraft Notebook (ACN).

The AMPS provides automated mission planning, risk assessment and transfer of mission data to Army Aviation platforms in support of Mission Command functions within Aviation units. The AMPS system supports pre-mission planning and rehearsal, including route planning, communications planning, and aircraft configuration. AMPS has the ability to generate mission data in either hard copy or electronic formats. The electronic formats are loaded onto the aircraft platforms utilizing a Data Transfer Device initializing the communication, navigation, and weapons systems on the aircraft. Supported aircraft include the AH-64D/E, CH-47F, UH-60L/M/Q, and HH-60M, and Handheld applications. Support for the Enhanced Medium Altitude Reconnaissance Surveillance System (EMARSS), UH-60V, AH-64E V6, and Unmanned Aircraft Systems (UAS) in the U.S. baseline will be provided in a future release. The AMPS supports Fixed Wing aircraft with Take Off Landing Distance calculators, AH-64 aircraft with a mobile Maintenance Test Flight Calculator and Army Rotary Wing aircraft with Integrated Performance Aircraft Configuration Tool/Flight Performance Models for performance and Weight and Balance planning. The AMPS program includes management of the Commander's Aviation Risk Tool and the Centralized Aviation Flight Records System (CAFRS). The AMPS hardware is replaced after five years of use to accommodate rapid commercial technology changes. The AMPS program manages and supports FliteScene Software licenses, maintenance agreements, and related engineering services. FliteScene is a digital map technology application that provides enhanced navigation capabilities to the military flight crew. FliteScene Digital Map is a high performance, combat proven, digital map software product. FliteScene Digital Map software forward-looking capabilities enhance mission effectiveness and include presentation of weather, contour lines, slope shading, dynamic elevation banding, threat depiction, variable scaling, and symbology overlays.

The IDM is the common solution for digitizing Army Aviation and is fielded on every modernized, rotary-wing Army aircraft, including the CH-47 Chinook, AH-64 Apache and UH-60 Black Hawk. The IDM provides the Army rotary-wing fleet with critical communication capabilities, performing as an internet controller and gateway to the Tactical Internet and Fire Support Internet. The IDM facilitates connectivity to multiple radios used by rotary-wing aircraft and the Blue Force Tracker transceiver, as well as providing the means for rapid data transfer. This hardware/software solution also provides a flexible, software-driven digital messaging system that is interoperable with existing Army and Joint forces battlefield operating systems. The IDM provides Situational Awareness and Joint Variable Message Format messages capability to the cockpit and is critical to the flight operations of the AH-64D/E, CH-47F and UH/HH-60M/V fleets. The IDM hardware production is critical to the overall readiness of supported Army Aviation Platforms. The Multi-Core Processor-501 modification will be a technology replacement for the current Army IDM-401 and become a core component to support a Digital Backbone for Army rotary wing aircraft.

The ADEC is an Army aviation program providing capabilities needed at the aviation unit level to implement and support improvements within aviation operations, safety, and training to increase operational effectiveness and situational awareness at all command echelons. ADEC provides a common and interoperable capability required to implement the DoD mandated Military Flight Operations Quality Assurance processes. ADEC will standardize flight scheduling/management, risk management, mission approval, and flight data analysis and visualization. ADEC provides interfaces to CAFRS to reduce data entry and information technology footprint while enabling disconnected and split based operations. ADEC hardware architecture will provide a server infrastructure for residency of multiple critical army aviation programs.
such as Global Combat Support System - Army (GCSS-A), ACN and CAFRS. Army Aviation platforms are dependent upon ADEC as a host to enable a centralized architecture to support aviation critical mission operations.

The ACN is an Army Aviation program required for the completion of aviation maintenance activities and the documentation required to maintain airworthiness for all Army aircraft. ACN implements The Army Maintenance Management System - Aviation policy and procedures and integrates with CAFRS, GCSS-A, Maintenance Consolidated Database System, and Enterprise Materiel Status Reporting to reduce manual entries and increase data accuracy. ACN reduces the information technology footprint within an aviation unit by integrating multiple software applications such as the interactive electronic technical manuals, platform software applications, and condition based maintenance plus tools onto a multi-purpose hardware platform. ACN provides its data to the Consolidated Aviation Maintenance Management system to provide a fleet and higher echelon view of material status and manage non-standard supply actions. The ACN is being fielded to all Army Aviation units, Rotary-wing, Fixed-wing and Unmanned Aircraft System equipped units. ACN will completely replace the Unit Level Logistics System - Aviation (Enhanced) and Unmanned Aircraft Systems - Initiative systems currently in use by the end of FY19.

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

FY 2020 Base procurement dollars in the amount of $15.903 million supports AMPS software revisions necessary for aviation fleet modernization programs in support of Army Aviation?ś 27 aircraft variants. Maintains interoperability and commonality with Army Mission Command initiatives.

FY 2020 Base procurement dollars in the amount of $82.024 million supports the procurement of IDM-401 kits to upgrade the fleet from the IDM-304 and IDM-304B variants and to provide a technology refresh to the IDM hardware. The funding will also address modifications to the IDM application software and the host computing environment to support an open systems approach to integration of application software which will drive down software costs. The funding will maintain compliance with cybersecurity, and changes to the functionality of the IDM application in support of Army Networking initiatives for new radios and mission command modernization. These kits support production line and modification work order installations for the AH-64D/E, CH-47F and HH/UH-60M/V helicopters.

FY 2020 Base procurement dollars in the amount of $7.525 million supports the procurement of software and software licenses and complete the fielding and training of ACN systems for Army Aviation fixed-wing units, upgrading of ACN software, and staffing of a 24 hour Help Desk.

FY 2020 OCO procurement dollars in the amount of $0.010 million supports unit fielding and training in Europe in order to provide Aviation Mission Planning System.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
## P-3a, Individual Modification: PB 2020 Army

### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

### P-1 Line Item Number / Title:
8658AA0712 / Network And Mission Plan

### Modification Number / Title:
AA0712 / Network and Mission Plan

### ID Code (A=Service Ready, B=Not Service Ready):

### MDAP/MAIS Code:

### Models of Systems Affected:
AH-64D/E, CH-47D/F, UH-60A/L/M/Q/V, HH-60L/M, EMARSS, UH-72,UAS

### Modification Type:
Rationalization, Standardization, Interoperability, Compatibility, Simplification

### Related RDT&E PEs:

### Acquisition Plan:

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### Procurement

#### Modification Item 1 of 4: Aviation Mission Planning System (AMPS)

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<td>Kit Quantity- (Computer)</td>
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<td>ECPs</td>
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#### Modification Item 2 of 4: Improved Data Modem (IDM)

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### Modification Item 3 of 4: Aviation Data Exploitation Capability (ADEC)

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### P-1 Line #29

LI 8658AA0712 - Network And Mission Plan

**UNCLASSIFIED**

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**LI 8658AA0712 - Network And Mission Plan**

**UNCLASSIFIED**

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**P-1 Line #29**

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**LI 8658AA0712 - Network And Mission Plan**

**UNCLASSIFIED**

Page 6 of 11

**P-1 Line #29**
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<th>Models of Systems Affected: AH-64D/E, CH-47D/F, UH-60A/L/M/Q/V, HH-60L/M, EMARSS, UH-72,UAS</th>
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**Modification Type:** Rationalization, Standardization, Interoperability, Compatibility, Simplification

**Related RDT&E PEs:**

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**Modification Item 4 of 4: Aircraft Notebook (ACN)**

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### Installation

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<td>Subtotal: Installation</td>
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| Total | 596.957 | 132.402 | 116.814 | 105.442 | 0.010 | 105.452 | 77.687 | 42.617 | 50.718 | 43.510 |

**Total Cost (Procurement + Support + Installation)**

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**UNCLASSIFIED**
### Installation Schedule

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**Exhibit P-3a, Individual Modification:** PB 2020 Army

| Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10 | P-1 Line Item Number / Title: 8658AA0712 / Network And Mission Plan | Modification Number / Title: AA0712 / Network and Mission Plan |

**ID Code** (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code: 

**Modification Item 2 of 4:** Improved Data Modem (IDM)

**Manufacturer Information**
Manufacturer Name: AMRDEC Software Engineering Directorate  
Manufacturer Location: Redstone Arsenal, AL

**Administrative Leadtime (in Months):**

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**Installation Information**

**Method of Implementation:** Not Applicable

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**Installation Schedule**

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LI 8658AA0712 - Network And Mission Plan

UNCLASSIFIED

Page 9 of 11

Army

P-1 Line #29

211
### Method of Implementation:

Not Applicable

### Installation Information

#### Installation Schedule

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<th>FY 2021</th>
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### Installation Leadtime

- **Method of Implementation:** Not Applicable
- **Delivery Dates:**
  - FY 2018: -
  - FY 2019: -
  - FY 2020: -
  - FY 2021: -
  - FY 2022: -
  - FY 2023: -
  - FY 2024: -

### Manufacturer Information

- **Manufacturer Name:** AMRDEC Software Engineering Directorate
- **Manufacturer Location:** Redstone Arsenal, AL

### MDAP/MAIS Code

- **Modification Item 3 of 4:** Aviation Data Exploitation Capability (ADEC)

### Network and Mission Plan

- **P-1 Line Item Number / Title:** 8658AA0712 / Network And Mission Plan
- **Modification Number / Title:** AA0712 / Network and Mission Plan

### Prior Years

- **FY 2018:**
  - Base: 1/0.000
  - OCO: -
  - Total: 1/0.000

- **FY 2019:**
  - Base: 0/0.000
  - OCO: -
  - Total: 0/0.000

- **FY 2020:**
  - Base: 0/0.000
  - OCO: -
  - Total: 0/0.000

- **FY 2021:**
  - Base: -
  - OCO: -
  - Total: -

- **FY 2022:**
  - Base: -
  - OCO: -
  - Total: -

- **FY 2023:**
  - Base: -
  - OCO: -
  - Total: -

- **FY 2024:**
  - Base: -
  - OCO: -
  - Total: -

### Total Cost

- **Base:** 1/0.000
- **OCO:** -
- **Total:** 1/0.000

---

**Disclaimer:** This appears to be a technical document related to military network and mission planning. The content is presented in a structured format that includes dates, costs, and other technical specifications. The document is likely related to a specific project or modification within the Army's network and mission planning framework.
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8658AA0712 / Network And Mission Plan

**Modification Number / Title:** AA0712 / Network and Mission Plan

**ID Code** (A=Service Ready, B=Not Service Ready):

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**Manufacturer Information**

- **Manufacturer Name:** AMRDEC Software Engineering Directorate
- **Manufacturer Location:** Redstone Arsenal, AL

**Administrative Leadtime (in Months):**

**Production Leadtime (in Months):**

**Installation Information**

**Installation Schedule**

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<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>PYS</td>
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<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
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**Installation Schedule**

**Prior Years**

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**FY 2018**

- FY 2018
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  - - - - - - - -
  - Total: 1.0 0.000

**FY 2019**

- FY 2019
  - 0.1 0.000
  - - - - - - - -
  - Total: 0.1 0.000

**FY 2020**

- FY 2020
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  - - - - - - - -
  - Total: 0.1 0.000

**FY 2021**

- FY 2021
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  - - - - - - - -
  - Total: 0.1 0.000

**FY 2022**

- FY 2022
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  - - - - - - - -
  - Total: 0.1 0.000

**FY 2023**

- FY 2023
  - 0.1 0.000
  - - - - - - - -
  - Total: 0.1 0.000

**FY 2024**

- FY 2024
  - 0.1 0.000
  - - - - - - - -
  - Total: 0.1 0.000

**Total**

- Total: 1.1 0.000
### Description:
The current Navigation Systems provide Army Aviation with extremely accurate and secure navigation and timing, assists in situational awareness, and aids in prevention of fratricide. The Global Positioning System (GPS) is installed in two configurations based upon mission profile, operational requirements, and avionics architecture of the aircraft. The Doppler GPS Navigation Set (DGNS) is used for the Non-bussed Utility and Cargo helicopters. The Embedded GPS Inertial Navigation System (EGI) is integrated into the Modernized Cargo, Utility, Attack, and Special Operations fleets of helicopters. The upgraded DGNS Computer Display Unit (CDU) and GPS Anti-jam Antenna is being installed on the Blackhawk (UH-60A/L and HH-60A/L). The P3I EGI A-Kits and B-Kits are being installed on UH/HH-60M, CH-47F, Apache (AH-64E), and Special Operations Aircraft (SOA) and bring a number of enhancements required for operations in civil airspace as well as improved levels of Assured - Position, Navigation and Timing through Military Code (M-Code) GPS signals and GPS Anti-jam Antennas. The modernization program to the DGNS Computer Display Unit (CDU), A-Kit, and software upgrades are being conducted to reduce pilot workload and fatigue through a user friendly interface, provide maps and charts to augment tactical and Instrument Flight Rules navigational operations, and bring GPS Anti-Jam capabilities which significantly improve levels of Assured - Position, Navigation, and Timing (A-PNT) through GPS jammer nulling technology.

The Aviation Tactical Communication Systems (ATCS) programs are Army Aviation Programs to procure, integrate, and field A and B Kits to meet Army Aviation Communications requirements. The ATCS B-Kits include the ARC-201D and the ARC-231 radio sets along with associated power amplifiers and mounts. A-Kit hardware is procured from a number of industry partners dependent upon aircraft model and Flight Management System software modifications are planned to be procured through the prime contractor for each platform. The ATCS program is currently split between two separate programs, the first is Alt Comms, which includes the ARC-231 utilizing the RT-1808A radio, and the second, Multi-mode Aviation Radio Set (MARS), which consists of the ARC-231 upgrade program bringing modernized waveforms and cryptography through the RT-1897 radio.

The Aviation Maritime Fixed-Air Avionics (AMF-A) Radio Integration Program installs and qualifies the Army's Future Airborne Networking Radio hardware and software for production line and fielded Army Aviation Aircraft Rotary Wing Aircraft, SOA, and Unmanned Aircraft Systems (UAS) platforms to enable the operation of PEO C3I software defined networking radios with SINCGARS and other future advanced networking waveforms. The program also provides for the procurement and installation of AMF Radio retrofit A-Kits for use on platforms that were fielded without these capabilities. AMF Radios and ancillaries are procured by PM Tactical Radios and are not part of the AMF Radio Integration effort.

The Blue Force Tracking - Aviation (BFT-A) Program integrates, qualifies, and manages the installation of BFT-2 system installation kits (A-Kit) for Army Rotary Wing Aircraft. The A-Kit utilizes the BFT-2 transceiver and KGV-72 boxes provided by PM Mission Command (MC).

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

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### Resource Summary

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<td>162,639</td>
<td>156,969</td>
<td>164,315</td>
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<td>164,315</td>
<td>138,817</td>
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(continued Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Initial Spares ($ in Millions)

- - - - - - - -

### Flyaway Unit Cost ($ in Thousands)

- - - - - - - -

### Gross/Weapon System Unit Cost ($ in Thousands)

- - - - - - - -
### Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
- 2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
- 8659AA0723 / Comms, Nav Surveillance

**ID Code (A=Service Ready, B=Not Service Ready):**
- Program Elements for Code B Items: N/A
- Other Related Program Elements: 0604201A

**Line Item MDAP/MAIS Code:** N/A

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**LI 8659AA0723 - Comms, Nav Surveillance Army**
### Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**ID Code** (A=Service Ready, B=Not Service Ready):

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** 0604201A

**Line Item MDAP/MAIS Code:** N/A

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#### Exhibits Schedule

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**Exhibits Schedule**

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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.*

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

### Justification:

FY 2020 Base Procurement dollars in the amount of $25.649 million supports the procurement and installation of upgraded DGNS CDUs for the UH/HH-60L aircraft.

FY 2020 Base Procurement dollars in the amount of $10.213 million supports the procurement and integration of GPS anti-jam antenna capability for the UH/HH-60L aircraft which brings increased levels of A-PNT.

FY 2020 Base Procurement dollars in the amount of $3.332 million provides for systems engineering and test for the M-Code capable EGI into four modernized Army aircraft platforms enhancing the A-PNT capabilities on those aircraft.

FY 2020 Base Procurement dollars in the amount of $18.515 million provides for procurement of GPS anti-jam antenna A-Kits and platform integration for a GPS anti-jam antenna capability onto nine modernized Army aircraft platforms to bring greater levels of A-PNT to those platforms.

FY 2020 Base Procurement dollars in the amount of $0.778 million supports installation of ARC-231 systems on UH-60L aircraft.

FY 2020 Base Procurement dollars in the amount of $88.377 million supports ARC-231A production line requirements, fielding the ARC-231A to one CAB, and system test and evaluation of ARC-231A/MARS B Kits as well as the aircraft integration to support crypto-modernization.

FY 2020 Base Procurement dollars in the amount of $17.451 million provides for the procurement and installation BFT-2 A-Kits.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
The current Navigation Systems provide Army Aviation with extremely accurate and secure navigation and timing, assists in situational awareness, and aids in prevention of fratricide. The Global Positioning System (GPS) is installed in two configurations based upon mission profile, operational requirements, and avionics architecture of the aircraft. The Doppler GPS Navigation Set (DGNS) is used for the non-bussed Utility and Cargo helicopters. The Embedded GPS Inertial Navigation System (EGI) is integrated into the Modernized Cargo, Utility, Attack, and Special Operations fleets of helicopters. The upgraded DGNS Computer Display Unit (CDU) and GPS Anti-jam Antenna is being installed on the Blackhawk (UH-60A/L and HH-60A/L). The P3i EGI A-Kits and B-Kits are being installed on UH/HH-60M, CH-47F, Apache (AH-64E), and Special Operations Aircraft (SOA) and bring a number of enhancements required for operations in civil airspace as well as improved levels of Assured - Position, Navigation and Timing through Military Code (M-Code) GPS signals and GPS Anti-jam Antennas. The modification program to the DGNS Computer Display Unit (CDU), A-Kit, and software upgrades are being conducted to reduce pilot workload and fatigue through a user friendly interface, provide maps and charts to augment tactical and Instrument Flight Rules navigational operations, and bring GPS Anti-Jam capabilities which significantly improve levels of Assured - Position, Navigation, and Timing (A-PNT) through GPS jammer nulling technology.

The Aviation Tactical Communication Systems (ATCS) programs are Army Aviation Programs to procure, integrate, and field A and B Kits to meet Army Aviation Communications requirements. The ATCS B-Kits include the ARC-201D and the ARC-231 radio sets along with associated power amplifiers and mounts. A-Kit hardware is procured from a number of industry partners dependent upon aircraft model and Flight Management System software modifications are planned to be procured through the prime contractor for each platform. The ATCS program is currently split between two separate programs, the first is Alt Comms, which includes the ARC-231 utilizing the RT-1808A radio, and the second, Multi-mode Aviation Radio Set (MARS), which consists of the ARC-231 upgrade program bringing modernized waveforms and cryptography through the RT-1987 radio.

The Aviation Maritime Fixed- Aviation (AMF-A) Radio Integration Program installs and qualifies the Army's Future Airborne Networking Radio hardware and software for production line and fielded Army Aviation Aircraft Rotary Wing Aircraft, SOA, and Unmanned Aircraft Systems (UAS) platforms to enable the operation of PEO C3T software defined networking radios with SINCGARS and other future advanced networking waveforms. This program also provides for the procurement and installation of AMF Radio retrofit A-Kits for use on platforms that were fielded without these capabilities. AMF Radios and ancillaries are procured by PM Tactical Radios and are not part of the AMF Radio Integration effort. Beginning in FY19, the AMF-A radio integration program has been terminated.

The Blue Force Tracking - Aviation (BFT-A) Program integrates, qualifies, and manages the installation of BFT-2 system installation kits (A-Kit) for Army Rotary Wing Aircraft. The A-Kit utilizes the BFT-2 transceiver and KGV-72 boxes provided by PM Mission Command (MC).

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 8659AA0723 / Comms, Nav Surveillance
Modification Number / Title: AA0723 / Communications, Navigation, and Surveillance

ID Code (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

-- Justification --

FY 2020 Base Procurement dollars in the amount of $25.649 million supports the procurement and installation of upgraded DGNS CDUs for the UH/HH-60L aircraft.

FY 2020 Base Procurement dollars in the amount of $10.213 million supports the procurement and integration of GPS anti-jam antenna capability for the UH/HH-60L aircraft which brings increased levels of A-PNT.

FY 2020 Base Procurement dollars in the amount of $3.332 million provides for systems engineering and test for the M-Code capable EGI into four modernized Army aircraft platforms enhancing the A-PNT capabilities on those aircraft.

FY 2020 Base Procurement dollars in the amount of $18.515 million provides for procurement of GPS anti-jam antenna A-Kits and platform integration for a GPS anti-jam antenna capability onto nine modernized Army aircraft platforms to bring greater levels of A-PNT to those platforms.

FY 2020 Base Procurement dollars in the amount of $0.778 million supports installation of ARC-231 systems on UH-60L aircraft.

FY 2020 Base Procurement dollars in the amount of $88.377 million supports ARC-231A production line requirements, fielding the ARC-231A to one CAB, and system test and evaluation of ARC-231A/MARS B Kits as well as the aircraft integration to support crypto-modernization.

FY 2020 Base Procurement dollars in the amount of $17.451 million provides for the procurement and installation BFT-2 A-Kits.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.

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LI 8659AA0723 - Comms, Nav Surveillance
UNCLASSIFIED
Page 5 of 20
Army
P-1 Line #30

218
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:** AA0723 / Communications, Navigation, and Surveillance

**ID Code** (A=Service Ready, B=Not Service Ready) :

**MDAP/MAIS Code:**

### Models of Systems Affected:

- UH/HH-60A/L, UH/HH-MH-60M, CH-47D, CH/MH-47F, AH-64D/E, LUH, UAS

### Modification Type:

- New or Improved Operational Capability

### Related RDT&E PEs:

**UNCLASSIFIED**

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**Modification Item 2 of 9: DGNS (AN/ASN-128D) CDU/ SW Upgrade ECP B-Kit**

### B Kits | Recurring |
| Upgraded CDU | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| 125 | 9.062 | 125 | - | 125 | 50 | 16.135 | 300 | 20.590 | - | - | - | 620 | 47.249 |
| - | - | 50 | 6.517 | 1.527 | - | - | - | - | - | - | 16.819 |
| Systems Eng / Program Management | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | 4.422 | - | - | - | - | - | - | - | - | 11.161 |
| Subtotal: Recurring | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| 125 | 15.370 | 125 | - | 125 | 50 | 16.135 | 300 | 23.030 | - | - | - | 620 | 75.229 |

### Non-Recurring |

| Data / Training | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | 2.438 | - | - | - | - | - | - | - | - | 1.349 |
| Aircraft Integration | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | 8.030 | - | - | - | - | - | - | - | - | 13.485 |
| Systems Test & Evaluation | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | 2.764 | - | - | - | - | - | - | - | - | 17.520 |
| Subtotal: Non-Recurring | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | 13.232 | - | - | - | - | - | - | - | - | 24.354 |
| Subtotal: DGNS (AN/ASN-128D) CDU/SW Upgrade ECP B-Kit | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| 125 | 28.602 | 125 | - | 125 | 50 | 16.135 | 300 | 23.549 | - | - | - | 620 | 99.583 |

**Modification Item 3 of 9: DGNS (AN/ASN-128D) CDU/ SW Upgrade ECP A-Kit**

### A Kits | Recurring |

| GPS Anti Jam Antenna | Qty (Each) | FY 2018 | FY 2019 | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 | To Complete | Total |
| - | - | I | - | - | 235 | 7.748 | 300 | 8.100 | - | - | 115 | 3.560 | 22.778 |

**UNCLASSIFIED**
### Models of Systems Affected:
- UH/HH-60A/L, UH/HH-MH-60M, CH-47D, CH/MH-47F, AH-64D/E, LUH, UAS

### Modification Type:
- New or Improved Operational Capability

### Financial Plan

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### Modification Item 4 of 9: Embedded GPS Inertial Nav System (EGI) P3I B-Kit

**B Kits**

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### Related RDT&E PEs:
- **Unlimited**
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 8659AA0723 / Comms, Nav Surveillance

Modification Number / Title: AA0723 / Communications, Navigation, and Surveillance

ID Code (A=Service Ready, B=Not Service Ready) : MDAP/MAIS Code:

Models of Systems Affected: UH/HH-60A/L, UH/HH/ MH-60M, CH-47D, CH/MIH-47F, AH-64D/E, LUH, UAS

Modification Type: New or Improved Operational Capability

Related RDT&E PEs:

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Non-Recurring

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- Systems Test & Evaluation
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  - / - / 3.902 / 27.070 / 8.292 / 2.917 / 1.405 / 1.055 / - / - / - / 44.641

Subtotal: Embedded GPS Inertial Nav System (EGI) P3I A-Kit

Modification Item 6 of 9: Aviation Tactical Comm Systems (ATCS) - Alt Comms

A Kits

- Recurring
  - Kit Quantity-A-Kit

- Systems Engineering / Program Management

- System Test & Evaluation

- Training / Data / Support Equipment

- Fielding

- Subtotal: Recurring

Non-Recurring

- Aircraft Integration

- Subtotal: Non-Recurring

B Kits

- Recurring
  - Kit Quantity-B-Kit (ARC-231) Shipsets

- Kit Quantity-B-Kit (ARC201D) Shipsets

- Subtotal: Recurring

- Subtotal: Aviation Tactical Comm Systems (ATCS) - Alt Comms

Modification Item 7 of 9: Aviation Tactical Comm Systems (ATCS) - MARS

A Kits

- Recurring
  - Kit Quantity-A-Kit
### Exhibit P-3a, Individual Modification: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

#### P-1 Line Item Number / Title:
8659AA0723 / Comms, Nav Surveillance

#### Modification Number / Title:
AA0723 / Communications, Navigation, and Surveillance

#### ID Code (A=Service Ready, B=Not Service Ready):

#### MDAP/MAIS Code:

### Models of Systems Affected: UH/HH-60A/L, UH/HH/MH-60M, CH-47D, CH/MH-47F, AH-64D/E, LHU, UHAS

#### Modification Type: New or Improved Operational Capability

#### Related RDT&E PE's:

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### B Kits

#### Recurring

- Kit Shipset Qty B-Kit (ARC-231) - PIM
- Kit Shipset Qty B-Kit (ARC 231) - GFE
- Kit Shipset Qty B-Kit (ARC-231) for MHO
- Training/Data

#### Non-Recurring

- ECP - Non-Recurring
- Subtotal: Non-Recurring

#### Subtotal: Aviation Tactical Comm Systems (ATCS) - MARS

### Modification Item 8 of 9: Airborne Maritime Fixed (AMF-A) Radio Integration

#### A Kits

#### Recurring

- Kit Quantity - A-Kit - Production Line
- Support Equipment
- System Test and Evaluation
- System Eng/Prog Mgmt (SEPM)

#### Non-Recurring

- NRE Aircraft Integration

---

**United States Army**

LI 8659AA0723 - Comms, Nav Surveillance

**Page 9 of 20**

**P-1 Line #30**

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**Modification Item 9 of 9: Blue Force Tracking-Aviation (BFT-A)**

**A Kits**

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**Installation**

| Modification Item 1 of 9: DGNS (AN/ASN-128D) P3i | 46 / 0.296 |
| Modification Item 2 of 9: DGNS (AN/ASN-128D) CDU/ SW Upgrade ECP B-Kit | - / - |
| Modification Item 3 of 9: DGNS (AN/ASN-128D) CDU/ SW Upgrade ECP A-Kit | - / - |
| Modification Item 4 of 9: Embedded GPS Inertial Nav System (EGI) P3i B-Kit | 51 / 0.447 |
| Modification Item 5 of 9: Embedded GPS Inertial Nav System (EGI) P3i A-Kit | - / - |
| Modification Item 6 of 9: Aviation Tactical Comm Systems (ATCS) - Alt Comms | 303 / 14.212 |
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:** AA0723 / Communications, Navigation, and Surveillance

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**Models of Systems Affected:** UH/HH-60A/L, UH/HH/ MH-60M, CH-47D, CH/MH-47F, AH-64D/E, LUH, UAS

**Modification Type:** New or Improved Operational Capability

**Related RDT&E PEs:**

### Financial Plan

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**Total**

| Total Cost (Procurement + Support + Installation) | 559.151 | 162.639 | 156.969 | 164.315 | - | 164.315 | 138.817 | 94.588 | 149.306 | 116.084 | Continuing | Continuing |

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**Date:** March 2019
**UNCLASSIFIED**

Exhibit P-3a, Individual Modification: PB 2020 Army

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**ID Code** (A=Service Ready, B=Not Service Ready) :

Modification Item 1 of 9: DGNS (AN/ASN-128D) P3I

**Manufacturer Information**

Manufacturer Name: BAE International Incorporated
Manufacturer Location: Wayne, NJ

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**Installation Information**

Method of Implementation: Prototype Assets

**Installation Schedule**

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**Exhibit P-3a, Individual Modification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:** AA0723 / Communications, Navigation, and Surveillance

**Date:** March 2019

**ID Code (A=Service Ready, B=Not Service Ready):**

**MDAP/MAIS Code:**

**Modification Item 2 of 9:** DGNS (AN/ASN-128D) CDU/SW Upgrade ECP B-Kit

---

### Manufacturer Information

- **Manufacturer Name:** BAE International Incorporated
- **Manufacturer Location:** Wayne, NJ

---

### Administrative Leadtime: 2

**Production Leadtime (in Months):** 12

---

### Contract Dates

- FY 2018: Dec 2017
- FY 2019: Dec 2018
- **FY 2020:** Dec 2019
- FY 2021: Dec 2020
- FY 2022: Dec 2021
- FY 2023: Dec 2022
- FY 2024: Dec 2023

### Delivery Dates

- FY 2018: Nov 2018
- FY 2019: Nov 2019
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- FY 2021: Nov 2021
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### Installation Information

**Method of Implementation:** Modification Work Order (MWO)

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Exhibit P-3a, Individual Modification: PB 2020 Army

Modification Item 3 of 9: DGNS (AN/ASN-128D) CDU/SW Upgrade ECP A-Kit

Manufacturer Information

Manufacturer Name: Mayflower Communications, Inc.
Manufacturer Location: Boston, MA

Administrative Leadtime (in Months): 2
Production Leadtime (in Months): 12

Installation Information

Method of Implementation: MWO

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**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Modification Number / Title:**
AA0723 / Communications, Navigation, and Surveillance

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
8659AA0723 / Comms, Nav Surveillance

**ID Code**
(A=Service Ready, B=Not Service Ready)

| MDAP/MAIS Code: | 
|---|---|

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**Installation Information**

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Exhibit P-3a, Individual Modification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:** AA0723 / Communications, Navigation, and Surveillance

**ID Code** (A=Service Ready, B=Not Service Ready):

**MDAP/MAIS Code:**

**Modification Item 5 of 9:** Embedded GPS Inertial Nav System (EGI) P3I A-Kit

**Manufacturer Information**

Manufacturer Name: Mayflower Communications, Inc.

Manufacturer Location: Boston, MA

**Administrative Leadtime (in Months):** 2

**Production Leadtime (in Months):** 12

### Installation Information

**Method of Implementation:** MWO Installation

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**Installation Schedule**

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LI 8659AA0723 - Comms, Nav Surveillance

UNCLASSIFIED

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P-1 Line #30

229
**UNCLASSIFIED**

Exhibit P-3a, Individual Modification: PB 2020 Army

### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

### P-1 Line Item Number / Title:
8659AA0723 / Comms, Nav Surveillance

### Modification Number / Title:
AA0723 / Communications, Navigation, and Surveillance

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**Modification Item 6 of 9: Aviation Tactical Comm Systems (ATCS) - Alt Comms**

**Manufacturer Information**

- **Manufacturer Name:** Various
- **Manufacturer Location:** Various
- **Administrative Leadtime (in Months):** 2
- **Production Leadtime (in Months):** 10

**Installation Information**

**Method of Implementation:** Modification Work Order (MWO)

**Installation Schedule**

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    - **FY 2019**
      - **Qty (Each) / Total Cost ($ M)**
        - 76 / 3.304
      - **FY 2020**
        - **Qty (Each) / Total Cost ($ M)**
          - 24 / 1.900
        - **FY 2020**
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            - 12 / 0.778
  - **FY 2021**
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### Summary

- **Installation Schedule**
  - **FY 2024**
    - **Qty (Each) / Total Cost ($ M)**
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**Date:** March 2019
### Installation Information

**Method of Implementation:** MWO

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**Exhibit P-3a, Individual Modification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:**
AA0723 / Communications, Navigation, and Surveillance

**ID Code** (A=Service Ready, B=Not Service Ready):

**Method of Implementation:**
Delivery Dates
Contract Dates
Administrative Leadtime (in Months):
Manufacturer Name: TBD
Manufacturer Location: TBD
Production Leadtime (in Months):

**Installation Information**

**Installation Schedule**

<table>
<thead>
<tr>
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<th>Prior Years</th>
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<th>FY 2019 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
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<tbody>
<tr>
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<td>Qty (Each) I Total Cost ($ M)</td>
<td>Qty (Each) I Total Cost ($ M)</td>
<td>Qty (Each) I Total Cost ($ M)</td>
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**Installation Schedule**

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<tr>
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<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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<tbody>
<tr>
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<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
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<td>Q2</td>
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**Date:** March 2019

**UNCLASSIFIED**
**UNCLASSIFIED**

**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 8659AA0723 / Comms, Nav Surveillance

**Modification Number / Title:** AA0723 / Communications, Navigation, and Surveillance

**ID Code** (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

**Modification Item 9 of 9:** Blue Force Tracking-Aviation (BFT-A)

**Manufacturer Information**

- **Manufacturer Name:** Various
- **Manufacturer Location:** Various
- **Administrative Leadtime (in Months):** 8
- **Production Leadtime (in Months):** 10

**Dates**

<table>
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<tr>
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<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
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<tbody>
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<td>Delivery Dates</td>
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<td><strong>Mar 2020</strong></td>
<td><strong>Mar 2020</strong></td>
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<td><strong>Mar 2023</strong></td>
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**Installation Information**

**Method of Implementation:** Modification Work Order (MWO) - Contractor

**Installation Cost**

<table>
<thead>
<tr>
<th>Installation Cost</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<th>Total</th>
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<td>Total Cost ($ M)</td>
<td>Qty (Each)</td>
<td>Total Cost ($ M)</td>
<td>Qty (Each)</td>
<td>Total Cost ($ M)</td>
<td>Qty (Each)</td>
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**Installation Schedule**

<table>
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<tr>
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<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
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</thead>
<tbody>
<tr>
<td>PYS</td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
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### Description:
The Degraded Visual Environment (DVE) system provides situational awareness to enable hazard avoidance through sensors to support various modes of flight during training and tactical operations. The Army's DVE Directed Requirement (DR) is to procure 40 DVE systems and 8 spares for the Army Medical Evacuation and Special Operations helicopters to improve crew situational awareness in brownout environments.

The DVE Army Acquisition Objective has not been established yet. The FY20 funding on this budget request is in support of the DR.

### Resource Summary

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td>Total Obligation Authority ($ in Millions)</td>
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<td>49.450</td>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Secondary Distribution

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<td>Total Obligation Authority</td>
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<td>-</td>
<td>49.450</td>
<td>49.450</td>
<td>49.450</td>
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</table>
### Justification:
FY 2020 OCO procurement dollars in the amount of $49.500 million supports the procurement of DVE systems necessary to train, field and employ the DVE system on Army and Special Operations helicopters. These kits also support production line and modification work order (MWO) installations for the HH-60M helicopters.
The Degraded Visual Environment (DVE) system provides situational awareness to enable hazard avoidance through sensors to support various modes of flight during training and tactical operations. The Army’s DVE Directed Requirement (DR) is to procure 40 DVE systems and 8 spares for the Army Medical Evacuation and Special Operations helicopters to improve crew situational awareness in brownout environments.

The DVE Army Acquisition Objective has not been established yet. The FY20 funding on this budget request is in support of the DR.

<table>
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<td>49.450</td>
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<td>Total: Secondary Distribution</td>
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### Exhibit P-3a, Individual Modification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
8660A00713 / Degraded Visual Environment

**Modification Number / Title:**
A00713 / Degraded Visual Environment

**ID Code** (A=Service Ready, B=Not Service Ready): 

**MDAP/MAIS Code:**

#### Models of Systems Affected: HH-60M/MH-60M
- **Capability:** New or Improved Operational

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<tr>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<tr>
<td><strong>Modification Type:</strong> Degraded Visual Environment</td>
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<td>-</td>
<td>12</td>
<td>30.000</td>
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<td>0.000</td>
<td>36</td>
<td>48.770</td>
<td>36</td>
<td>48.770</td>
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<td>12</td>
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<td>36</td>
<td>48.770</td>
<td>36</td>
<td>48.770</td>
<td>130</td>
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</tbody>
</table>

### Installation

| Modification Type: Degraded Visual Environment | - | - | - | - | - | - | - | 6 | 6.080 | 6 | 6.080 | 9 | 1.020 | - | - | - | - | - | - | 15 | 1.700 |
| **Subtotal: Installation** | - | - | - | - | - | - | - | 6 | 6.080 | 6 | 6.080 | 9 | 1.020 | - | - | - | - | - | - | 15 | 1.700 |

**Total Cost (Procurement + Support + Installation):** 30.000 49.450 49.450 49.450 128.900
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 8660A00713 / Degraded Visual Environment

Modification Number / Title: A00713 / Degraded Visual Environment

ID Code (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

Modification Item 1 of 1: Degraded Visual Environment

Manufacturer Information

Manufacturer Name: Sierra Nevada Corporation
Manufacturer Location: Sparks, NV
Administrative Leadtime (in Months): 14
Production Leadtime (in Months): 10

Method of Implementation: Modification Work Order (MWO)

Delivery Dates

- Prior Years: 0
- FY 2019: 0
- FY 2020: 0
- FY 2021: 0
- FY 2022: 0
- FY 2023: 0
- FY 2024: 0

To Complete

- Prior Years: 0
- FY 2019: 0
- FY 2020: 0
- FY 2021: 0
- FY 2022: 0
- FY 2023: 0
- FY 2024: 0

Total

- Prior Years: 0
- FY 2019: 0
- FY 2020: 0
- FY 2021: 0
- FY 2022: 0
- FY 2023: 0
- FY 2024: 0

Installation Schedule

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<tr>
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<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
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LI 8660A00713 - Degraded Visual Environment

Army

UNCLASSIFIED
**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Date:** March 2019

### Appropriation / Budget Activity / Budget Sub Activity:

- 2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

### P-1 Line Item Number / Title:

- 8859AA0711 / GATM Rollup

### ID Code (A=Service Ready, B=Not Service Ready):

- N/A

### Program Elements for Code B Items: N/A

### Other Related Program Elements: N/A

### Line Item MDAP/MAIS Code: N/A

#### Resource Summary

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<th>FY 2019</th>
<th>FY 2020 Base</th>
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(Continued)

### Description:

This budget line supports procurement of Global Air Traffic Management equipment for both Fixed Wing and Rotary Wing aircraft.

Global Air Traffic Management (GATM) is the military equivalent of the International Civil Aviation architecture known as Communications, Navigation and Surveillance and air traffic management programs. GATM is a Department of Defense term that describes the equipment, training, and procedures mandated by Civilian Air Traffic Control authorities in order to operate within 21st century airspace. Most ground based navigation aids will be phased out of service as the world transitions to a modernized air traffic management system. The modernization is designed to meet the current and future service demands posed by aviation growth. The advanced architecture will provide improved safety, accessibility, flexibility, predictability, reliability, capacity, efficiency, and security. Military aircraft will face significant flight restrictions if not GATM equipped.

GATM fixed wing requirements cannot be met with a single piece of avionics equipment. Meeting worldwide GATM fixed wing requirements will entail complete modifications that may include portions of military modifications and the upgrading of some existing avionics and displays and the procurement of new systems for the fixed wing fleet to include Engineer, Furnish and Install as a complete contractual effort. It also leverages Federal Aviation Administration (FAA) Supplemental Type Certificates (STC) that are already in existence and applies STCs to aircraft modifications. These modifications ensure continued worldwide deployment capability and safe operations.

Meeting worldwide GATM requirements for rotary wing and Unmanned Aircraft System (UAS) fleets will entail the upgrading of some existing avionics and the procurement of new systems. Included in the GATM program is the European mandated 8.33 kHz channel spacing requirement which is being met by the Alt Comms and Multi-Mode Aviation Radio Set programs, and the Mode S requirement which is being met by the Common Transponder Program (CXP) (formerly APX-118, APX-123/123A, and Automatic Dependent Surveillance-Broadcast (ADS-B) programs). The FAA ADS-B Out mandate is being met through a series of upgrades to CXP components, Embedded GPS Inertial (EGI) Navigation Systems, and aircraft Flight Management Systems. Also included in the GATM program is the requirement to provide a GPS Primary Means Instrument Flight Rules navigation in civil and military controlled airspace.

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

### Secondary Distribution

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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title:
8859AA0711 / GATM Rollup

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

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Secondary Distribution: FY 2024

Total Obligation Authority:

LI 8859AA0711 - GATM Rollup

UNCLASSIFIED

UNCLASSIFIED

UNCLASSIFIED

LI 8859AA0711 - GATM Rollup

Army
### Justification:

FY 2020 Base Procurement dollars in the amount of $2.528 million supports the installation of APX-123/123A B Kits.

FY 2020 Base Procurement dollars in the amount of $18.605 million supports procurement and installation of EGI Navigational System B-Kits and associated aircraft integration costs to meet GATM requirements.

FY 2020 Base Procurement dollars in the amount of $9.082 million supports CXP B-Kit procurements of the APX-123A. The funding also provides for conversion kit procurements and the continued upgrades to the APX-118 to APX-123 and conversions to APX-123 to APX-123A.

FY 2020 Base Procurement dollars in the amount of $0.751 million supports installations of the APX-118 upgrade kits.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

---

### Exhibits Schedule

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Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.
The APX-118 to APX-123 and conversions to APX-123A. FY 2020 Base Procurement dollars in the amount of $9.082 million supports CXP B-Kit procurements of the APX-123A. The funding also provides for conversion kit procurements and the continued upgrades to the APX-118 to APX-123 and conversions to APX-123 to APX-123A.
FY 2020 Base Procurement dollars in the amount of $0.751 million supports installations of the APX-118 upgrade kits.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

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**Modification Item 1 of 6: Global Air Traffic Mgmt RW APX-123**

**A Kits**

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<th>FY 2024</th>
<th>To Complete</th>
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**Modification Item 2 of 6: Global Air Traffic Mgmt RW APX-118 Upgrade Kits**

**A Kits**

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**Modification Item 3 of 6: Global Air Traffic Mgmt RW ADS-B**

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**Modification Item 4 of 6: Embedded GPS Inertial (EGI) Navigation System ECP**

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**Total Cost**

- Prior Years: 828
- FY 2018: 3,347
- FY 2019: 2,375
- FY 2020: 828
- FY 2021: 66.319
- FY 2022: 66.319
- FY 2023: 66.319
- FY 2024: 66.319
- To Complete: 66.319
**Exhibit P-3a, Individual Modification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
8859AA0711 / GATM Rollup

**Modification Number / Title:**
AA0704 / GATM Rotary Wing Aircraft

**ID Code (A=Service Ready, B=Not Service Ready):**

**Models of Systems Affected:** UH&HH60A/L, CH47D/F, UH60M, MH47G, MH60M, A/MH6, AH64A/D/E, UAS

**Modification Type:** New or Improved Operational Capability

**Related RDT&E PEs:**

### Financial Plan

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<th>FY 2020 OCO</th>
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**Date:** March 2019

**Total Cost**

- FY 2018: 8859AA0711
- FY 2019: 8859AA0711
- FY 2020: 8859AA0711
- FY 2021: 8859AA0711
- FY 2022: 8859AA0711
- FY 2023: 8859AA0711
- FY 2024: 8859AA0711
- Total: 8859AA0711
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### Installation

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### Total

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<th>FY 2021</th>
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**Modification Type:** New or Improved Operational Capability

**Related RDT&E PEs:**

- Legacy GATM-RW Mods
- Installation
### Installation Information

**Method of Implementation:** Modification Work Order (MWO) - Contractor

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<td>Qty (Each) / Total Cost ($ M)</td>
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### Installation Schedule

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**Exhibit P-3a, Individual Modification:** PB 2020 Army  
**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**  
2031A / 02 / 10

**P-1 Line Item Number / Title:**  
LI 8859AA0711 / GATM Rollup

**Modification Number / Title:**  
AA0704 / GATM Rotary Wing Aircraft

**ID Code**  
(A=Service Ready, B=Not Service Ready) :

<table>
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<th>Modification Work Order (MWO) - Contractor</th>
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**Manufacturer Information**

Manufacturer Name: BAE Systems, Incorporated  
Manufacturer Location: Greenlawn, NY

**Administrative Leadtime (in Months):**

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**Installation Information**

**Installation Cost**

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**Installation Schedule**

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Exhibit P-3a, Individual Modification: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 8859AA0711 / GATM Rollup

Modification Number / Title: AA0704 / GATM Rotary Wing Aircraft

ID Code (A=Service Ready, B=Not Service Ready) : 

MDAP/MAIS Code: 

Modification Item 3 of 6: Global Air Traffic Mgmt RW ADS-B

Manufacturer Information

Manufacturer Name: SSAI
Manufacturer Location: Huntsville, AL

Administrative Leadtime (in Months):
Production Leadtime (in Months):

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Installation Information

Method of Implementation: Modification Work Order (MWO) - Contractor

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LI 8859AA0711 - GATM Rollup

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P-1 Line #32
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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10

P-1 Line Item Number / Title: 8859AA0711 / GATM Rollup

Modification Number / Title: AA0704 / GATM Rotary Wing Aircraft

ID Code (A=Service Ready, B=Not Service Ready) :

MDAP/MAIS Code:

Modification Item 4 of 6: Embedded GPS Inertial (EGI) Navigation System ECP

Manufacturer Information

Manufacturer Name: Honeywell, Incorporated

Manufacturer Location: Clearwater, FL

Administrative Leadtime (in Months): 2

Production Leadtime (in Months): 12

Method of Implementation: Modification Work Order (MWO)

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Installation Information

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P-1 Line #32
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**Method of Implementation:** MWO

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Exhibit P-3a, Individual Modification: PB 2020 Army

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**Modification Item 6 of 6:** Legacy GATM-RW Mods

**Manufacturer Information**

- Manufacturer Name: N/A
- Manufacturer Location: N/A

**Dates**

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**Installation Information**

- Method of Implementation (Organic): N/A
- Installation Quantity: 0

**Appropriation / Budget Activity / Budget Sub Activity:**

- 2031A / 02 / 10

**P-1 Line Item Number / Title:**

- 8859AA0711 / GATM Rollup

**Modification Number / Title:**

- AA0704 / GATM Rotary Wing Aircraft

**Date:** March 2019

**Administrative Leadtime (in Months):**

**Production Leadtime (in Months):**

**Dates**

- FY 2018
- FY 2019
- FY 2020
- FY 2021
- FY 2022
- FY 2023
- FY 2024
Description:
The Tactical Unmanned Aircraft System (TUAS) provides Army Brigade Combat Teams, Aviation Brigades, and Special Operation Groups situational awareness, improved wide-area target acquisition, Laser Designation, and high value target (HVT) tracking to conduct both shaping and decisive operations with greatly increased lethality. The TUAS meets the need for a day/night, multi sensor collection system with improved connectivity to joint forces that provides real time battle information that cannot be observed from standoff airborne sensor systems, ground collection systems, and scouts. The key performance parameters are blocked into RQ-7B (production) thresholds and subsequent upgrade objectives. The RQ-7B system is a Reconnaissance Surveillance Target Acquisition (RSTA), Command, Control, Communications, and Intelligence (C3I) system that supports Brigade, Battalion, and lower level elements. The RQ-7B Shadow has logged approximately 1,180,000 flight hours, most of which were flown in support of Overseas Contingency Operations (OCO).

The TUAS RQ-7B completed production of 104 Army systems in 2011 (FY 2009 Funding) and entered a modifications phase. These modifications are divided into three primary sections: RQ-7B v2, System Modifications, and Payload Modifications. The RQ-7B v2 or Shadow v2 effort incorporates Type 1 Encryption, STANAG 4586 Compliant Software, a Universal Ground Control Station (UGCS), a Universal Ground Data Terminal (UGDT), a STANAG 4586 compliant Portable Ground Control Station, and standardizes modifications introduced during the wars in Iraq and Afghanistan. System Modifications and Payload Modifications consolidate development activities not included in the Shadow v2 modification.

In 2009, the Product Office placed the last of the authorized 104 systems on contract, ending the Production phase of the acquisition. In 2010, the Army G8 established a RQ-7B UAV MODS Aircraft Procurement Exhibit approving several modifications for development and production. These modifications will be incrementally integrated, tested, and fielded in accordance with the technology readiness and funding profile. The major modifications are grouped as follows: (1) v2 Modifications (includes TCDL and Encryption), (2) Payload Modifications, (3) Air Vehicle Modifications, and (4) Ground Support Modifications. The RQ-7B v2 will be compliant with STANAG 4586 and the Joint Interoperability Profiles. To achieve this, the system incorporates the UGCS and UGDT along with an upgraded Air Data Terminal, Airborne Computer, and onboard software.

The RQ-7B v2 Shadow upgrade program complies with the congressionally mandated Tactical Control Data Link (TCDL) and North Atlantic Treaty Organization (NATO) Standardization Agreement 4586 in order to meet requirements in the Operational Requirements Document, provide a secure data link, an enhanced propulsion system, payload improvements, avionics improvements, and ground equipment improvements.

On 16 Nov 2017, the Army Acquisition Executive (AAE) approved an increase to the Shadow Army Acquisition Objective (AAO) from 104 to 115 Shadow systems which provides additional capability in the Combat Aviation Brigades (CABs).
**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**P-1 Line Item Number / Title:**
9555A00018 / RQ-7 UAV MODS

**ID Code (A=Service Ready, B=Not Service Ready):**

Program Elements for Code B Items: N/A
Other Related Program Elements: 0305204A, 0305233A

Line Item MDAP/MAIS Code: N/A

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Changed the P-Form Modification structure to comply with MIL-STD-881C, align with the R-Forms, and align with ACAT-I reporting requirements. The OSRVT Modification moved to Modification Line A00121 in 2017.

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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**P-1 Line Item Number / Title:** 9555A00018 / RQ-7 UAV MODS

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

**UNCLASSIFIED**

**ID Code** (A=Service Ready, B=Not Service Ready):

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**Line Item MDAP/MAIS Code:** N/A

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**Exhibit Type** | **Title*** | **Subexhibits** | **ID Code** | **MDAP/MAIS Code** | **Quantity / Total Cost (Each) / ($ M)** | **FY 2021** | **FY 2022** | **FY 2023** | **FY 2024** | **To Complete** | **Total** |
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**

On 16 Nov 2017 the Army Acquisition Executive (AAE) approved an increase to the Shadow Army Acquisition Objective (AAO) from 104 to 115 Shadow systems.


In accordance with Section 1815 of the FY2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
Description:

Justification:


Block III Air Vehicle Modifications:

Air Vehicle (AV) Modifications include the procurement of Block III Upgrade Kits, initial spares Block III Kits, and installation of those kits via Shadow aircraft retrofits. Weatherization modifications allow the AV to fly in low visibility conditions and in up to two inches of rain per hour. The SMC is an on board computer that provides airborne processing power. The SMC addresses obsolescence concerns, features a dual processor, and also contains 50x more processing power than the current computer. The EO/IR/LD Universal Interface Assembly eliminates reliance on a proprietary payload interface, introducing the capability to support payloads from multiple vendors. The Block III engine improves reliability over the current engine, increases thrust and reduces the noise signature of the Shadow system. The Communication Relay upgrade will enable voice communications to additional users who utilize other waveforms in the VHF and UHF bands. The VoIP upgrade will extend voice communications range from 85 km to 125 km, and will also provide a more reliable means of voice communications.

Ground Support Modifications:

Ground Support Modifications include New Equipment Training (NET) for newly fielded v2 systems, Launchers for Block III upgrade kits, and Government Furnished Equipment (GFE). NET is necessary to introduce new equipment to units that transition from the Shadow V2 to the Shadow V2 Block III system. The Block III upgrade kit requires 1 high powered launcher per unit to support operations at high altitudes. These high powered launchers will replace 1 of the standard launchers which currently reside with the unit. The high powered launchers are hydraulic-pneumatic rail launchers, enabling AV launch in austere tactical locations and at high altitudes with the Block III upgrade kits. GFE is required to procure hardware to support the production of Shadow v2 retrofit kits in production.

Payloads Modifications:

Payload modifications include program management, engineering, and logistics support to develop a competitive contract to select, integrate, and procure improved Shadow EO/IR/LD payloads.
### Exhibit P-3a, Individual Modification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
9555A00018 / RQ-7 UAV MODS

**Modification Number / Title:**
A00018 / RQ-7 UAV MODS

**Date:** March 2019

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Total: 258
UNCLASSIFIED

Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 9555A00018 / RQ-7 UAV MODS
Modification Number / Title: A00018 / RQ-7 UAV MODS

ID Code (A=Service Ready, B=Not Service Ready):

Models of Systems Affected: N/A

Modification Type: UNCLASSIFIED

Modification Item 1 of 6: SHADOW Version 2 (v2)

| A Kits | Recurring | Software | - | 11.648 | - | - | - | - | - | - | - | - | - | 0.000 | - | 11.648 |
| | | Pub/Tech Data | - | 3.747 | - | - | - | - | - | - | - | - | - | 0.000 | - | 3.747 |
| | | GFE | - | 60.287 | - | - | - | - | - | - | - | - | - | 0.000 | - | 60.287 |
| | | Training Equipment | 48 | 37.515 | - | - | - | - | - | - | - | - | - | 0.000 | 48 | 37.515 |
| | | Training (NET) | - | 51.798 | - | - | - | - | - | - | - | - | - | 0.000 | - | 51.798 |
| | | Program Management | - | 40.748 | - | - | - | - | - | - | - | - | - | 0.000 | - | 40.748 |
| | | Engineering | - | 20.980 | - | - | - | - | - | - | - | - | - | 0.000 | - | 20.980 |
| | | Logistics | - | 25.707 | - | - | - | - | - | - | - | - | - | 0.000 | - | 25.707 |
| | | Subtotal: Recurring | 48 | 252.430 | - | - | - | - | - | - | - | - | - | 0.000 | 48 | 252.430 |
| | Non-Recurring | Nonrecurring Engineering Obsolescence | - | 79.877 | - | - | - | - | - | - | - | - | - | 0.000 | - | 79.877 |
| | | Subtotal: Non-Recurring | - | 79.877 | - | - | - | - | - | - | - | - | - | 0.000 | - | 79.877 |
| B Kits | Recurring | Shadow v2 Retrofit Kits | 100 | 732.964 | - | - | - | - | - | - | - | - | - | 0.000 | 100 | 732.964 |
| | | UGCS Only System Retrofit | 28 | 89.763 | - | - | - | - | - | - | - | - | - | 0.000 | 28 | 89.763 |
| | | Launchers | 100 | 42.204 | - | - | - | - | - | - | - | - | - | 0.000 | 100 | 42.204 |
| | | MMF Retrofit Kits | 34 | 34.653 | - | - | - | - | - | - | - | - | - | 0.000 | 34 | 34.653 |
| | | Subtotal: Recurring | 262 | 899.584 | - | - | - | - | - | - | - | - | - | 0.000 | 262 | 899.584 |
| | | Subtotal: SHADOW Version 2 (v2) | 308 | 1,231.891 | - | - | - | - | - | - | - | - | - | 0.000 | 308 | 1,231.891 |

Modification Item 2 of 6: SHADOW SYSTEM MODIFICATIONS

| A Kits | Recurring | Weatherization | 268 | 8.684 | - | - | - | - | - | - | - | - | - | 0.000 | 268 | 8.684 |
| | | Nonrecurring Engineering (NRE) | - | 12.150 | - | - | - | - | - | - | - | - | - | 0.000 | - | 12.150 |
| | | Program Management | - | 15.904 | - | - | - | - | - | - | - | - | - | 0.000 | - | 15.904 |
| | | Engineering | - | 12.051 | - | - | - | - | - | - | - | - | - | 0.000 | - | 12.051 |
| | | Logistics | - | 12.723 | - | - | - | - | - | - | - | - | - | 0.000 | - | 12.723 |
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### Modification Item 3 of 6: SHADOW PAYLOAD UPGRADES/MODIFICATIONS

| A Kits | Recurring | | | | | | | | | | | | |
|----------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------|-------|
| Program Management | 1.306 / 1.408 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | / 0.000 | 1.306 / 1.408 |
| Engineering | 1.399 / 0.328 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | / 0.000 | 1.399 / 0.328 |
| Logistics | 1.698 / 0.328 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | / 0.000 | 1.698 / 0.328 |

### B Kits | Recurring | | | | | | | | | | | | |
| Basesight Tools | 19 / 1.749 | 60 / 5.340 | 42 / 3.818 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | / 0.000 | 139 / 12.771 |
| Subtotal: Recurring | 125 / 166.299 | 106 / 35.382 | 210 / 102.434 | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | - / - | / 0.000 | 478 / 269.488 |

### Modification Item 4 of 6: OSRVT MODIFICATIONS

| A Kits | Recurring | | | | | | | | | | | | |
|----------------|-------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-------------|-------|
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**Modification Item 5 of 6: Air Vehicle Modifications**

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### Exhibit P-3a, Individual Modification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 02 / 10

**P-1 Line Item Number / Title:**
9555A00018 / RQ-7 UAV MODS

**Modification Number / Title:**
A00018 / RQ-7 UAV MODS

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#### Modification Item 6 of 6: Ground Support Modifications

**A Kits**

**Recurring**

- Non-Recurring: - / - 0.471 / 0.471 - / - - / - - / - - / - - / - - / - - / - - / - - / - 0.471

**B Kits**

**Recurring**


#### Installation

- Modification Item 1 of 6: SHADOW Version 2 (v2) 1 / 0.000 - / - - / - - / - - / - - / - - / - - / - - / - - / - - / - 1 / 0.000
- Modification Item 2 of 6: SHADOW SYSTEM MODIFICATIONS 1 / 0.000 - / - - / - - / - - / - - / - - / - - / - - / - - / - - / - 1 / 0.000
- Modification Item 3 of 6: SHADOW PAYLOAD UPGRADES/MODIFICATIONS 1 / 0.000 - / - - / - - / - - / - - / - - / - - / - - / - - / - - / - 1 / 0.000
- Modification Item 4 of 6: OSRVDT MODIFICATIONS 1 / 0.000 - / - - / - - / - - / - - / - - / - - / - - / - - / - - / - 1 / 0.000
**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Modification Number / Title:** A00018 / RQ-7 UAV MODS

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 9555A00018 / RQ-7 UAV MODS

**Date:** March 2019

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Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 9555A00018 / RQ-7 UAV MODS
Modification Number / Title: A00018 / RQ-7 UAV MODS

ID Code (A=Service Ready, B=Not Service Ready) :
MDAP/MAIS Code:

Modification Item 2 of 6: SHADOW SYSTEM MODIFICATIONS

Manufacturer Information
Manufacturer Name: AAI
Manufacturer Location: Hunt Valley, MD
Administrative Leadtime (in Months): 6
Production Leadtime (in Months): 6

Dates
Contract Dates
Delivery Dates

Installation Information

Method of Implementation: FFP Contract

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Installation Schedule

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Exhibit P-3a, Individual Modification: PB 2020 Army  
Date: March 2019

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10  
**P-1 Line Item Number / Title:** 9555A00018 / RQ-7 UAV MODS

**Modification Number / Title:** A00018 / RQ-7 UAV MODS

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**Modification Item 3 of 6: SHADOW PAYLOAD UPGRADES/MODIFICATIONS**

**Manufacturer Information**

Manufacturer Name: AAI  
Manufacturer Location: Hunt Valley, MD

Administrative Leadtime (in Months): 6  
Production Leadtime (in Months): 6

**Installation Information**

**Installation Schedule**

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**Method of Implementation:** FFP Contract

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LI 9555A00018 - RQ-7 UAV MODS

Army
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**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 9555A00018 / RQ-7 UAV MODS

**Modification Number / Title:** A00018 / RQ-7 UAV MODS

**ID Code** (A=Service Ready, B=Not Service Ready): 

**MDAP/MAIS Code:**

**Modification Item 4 of 6:** OSRV MODIFICATIONS

**Manufacturer Information**

- **Manufacturer Name:** AAI
- **Manufacturer Location:** Hunt Valley, MD
- **Administrative Leadtime (in Months):** 4
- **Production Leadtime (in Months):** 12

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**Method of Implementation:** FFP Contract

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LI 9555A00018 - RQ-7 UAV MODS

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Army

Page 14 of 16

P-1 Line #33
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**UNCLASSIFIED**
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 9555A00018 / RQ-7 UAV MODS
Modification Number / Title: A00018 / RQ-7 UAV MODS

ID Code (A=Service Ready, B=Not Service Ready): MDAP/MAIS Code:

Modification Item 6 of 6: Ground Support Modifications

Manufacturer Information
Manufacturer Name: AAI
Manufacturer Location: Hunt Valley, MD
Administrative Leadtime (in Months): 7
Production Leadtime (in Months): 18

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Installation Information
Method of Implementation: FFP

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Installation Schedule

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<th>FY 2019</th>
<th>FY 2020</th>
<th>FY 2021</th>
<th>FY 2022</th>
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</table>
### Description:
The One System Remote Video Terminal (OSRVT) systems require an update to an Increment II OSRVT. The OSRVT Increment II Upgrade Program of Record (POR) began in FY 2012. The OSRVT Increment II consists of a Remote Operations Video Enhanced Receiver (ROVER), Miltope tablet, Antennas, UHF Modem, Type I encryption, Ku-Directional Antennas (KuDA) with an On-The-Move (OTM) capable variant, and an extended range Mobile Directional Antennas System (MDAS). Software supports decoding Telemetry Data from multiple Manned/Unmanned Aircraft Systems, provides Electro-Optical (EO)/Infrared (IR) payload control, and supports off-target calculations. OSRVT supports current operations and emerging requirements.

The OSRVT MODS APE A000121000, began in FY 2017. Prior to FY2017, OSRVT Procurement funds were provided via the SHADOW MODS APE A00018000.

### Resource Summary

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<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Initial Spares ($ in Millions)

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### Description:
The One System Remote Video Terminal (OSRVT) systems require an update to an Increment II OSRVT. The OSRVT Increment II Upgrade Program of Record (POR) began in FY 2012. The OSRVT Increment II consists of a Remote Operations Video Enhanced Receiver (ROVER), Miltope tablet, Antennas, UHF Modem, Type I encryption, Ku-Directional Antennas (KuDA) with an On-The-Move (OTM) capable variant, and an extended range Mobile Directional Antennas System (MDAS). Software supports decoding Telemetry Data from multiple Manned/Unmanned Aircraft Systems, provides Electro-Optical (EO)/Infrared (IR) payload control, and supports off-target calculations. OSRVT supports current operations and emerging requirements.

The OSRVT MODS APE A000121000, began in FY 2017. Prior to FY2017, OSRVT Procurement funds were provided via the SHADOW MODS APE A00018000.
Unclassified

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 02: Modification of Aircraft / BSA 10: Modification of Aircraft

P-1 Line Item Number / Title: 9556A01002 / UAS MODS

ID Code (A=Service Ready, B=Not Service Ready): B

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

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Justification:

FY2020 Base funding of $10.205M provides for procurement of 413 On-the-Move (OTM) modification of the Total OSRVT Basis of Issue Plan (BOIP) of 3,323. The OTM Modification enables full OSRVT functionality while on moving vehicle mounted systems.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
Exhibit P-3a, Individual Modification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 02 / 10
P-1 Line Item Number / Title: 9556A01002 / UAS MODS

Modification Number / Title: A00121 / OSRVT

Date: March 2019

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**Resource Summary**

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(Initial Spares ($ in Millions)

| Quantity | 355.692 | 19.470 | 26.373 | - | - | - | - | - | - | - | - |

Gross/Weapon System Unit Cost ($ in Thousands)

| 42.184 |

---

**Description:**

The One System Remote Video Terminal (OSRVT) systems requires an update to an Increment II OSRVT. The OSRVT Increment II Upgrade Program of Record (POR) began in FY 2012. The OSRVT Increment II consists of a Remote Operations Video Enhanced Receiver (ROVER), Miltope tablet, Antennas, UHF Modem, Type I encryption, Ku-Directional Antennas (KuDA) with an On-The-Move (OTM) capable variant, and an extended range Mobile Directional Antennas System (MDAS). Software supports decoding Telemetry Data from multiple Unmanned Aircraft Systems (UASs), provides Electro-Optical (EO)/ Infrared (IR) payload control, and supports off target calculations.

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## Exhibit P-3a, Individual Modification: PB 2020 Army

### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 02 / 10

### P-1 Line Item Number / Title:
9556A01002 / UAS MODS

### Modification Number / Title:
A00121 / OSRVT

### ID Code (A=Service Ready, B=Not Service Ready):

### MDAP/MAIS Code:

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### Procurement

#### Modification Item 1 of 1: OSRVT Mods

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### Installation

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### Total

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**Exhibit P-3a, Individual Modification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 02 / 10

**P-1 Line Item Number / Title:** 9556A01002 / UAS MODS

**Modification Number / Title:** A00121 / OSRVT

**Date:** March 2019

**ID Code** (A=Service Ready, B=Not Service Ready):

**MDAP/MAIS Code:**

---

### Modification Item 1 of 1: OSRVT Mods

#### Manufacturer Information

- **Manufacturer Name:** Textron/AAI
- **Manufacturer Location:** Hunt Valley, MD
- **Administrative Leadtime (in Months):** 4
- **Production Leadtime (in Months):** 12

#### Dates

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<th>FY 2019</th>
<th>FY 2020</th>
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#### Installation Information

- **Method of Implementation (Organic):** FFP Contract
- **Installation Quantity:** 0
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA

P-1 Line Item Number / Title:
3632AZ3504 / Aircraft Survivability Equipment

ID Code (A=Service Ready, B=Not Service Ready):

Other Related Program Elements: N/A

Resource Summary

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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<th>FY 2022</th>
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<td>52.297</td>
<td>71.065</td>
<td>99.082</td>
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</table>

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
Flyaway Unit Cost ($ in Thousands) | 23,684.448 | 2,087.625 | - | - | - | - | - | 6,438.731 | 5,694.038 | Continuing |

Description:
The Aircraft Survivability Equipment (ASE) budget line includes ASE Laser Countermeasures (AZ3508) and ASE Radio Frequency Countermeasures (AZ3511).

AZ3508 ASE Laser CM

Army Procurement Objective (APO) = 1,332 (APO based on B-Kits)

The AN/AVR-2B Laser Detecting Set (LDS) installed on Army rotary-wing aircraft passively detects laser-aided weapons targeting the aircraft and alerts aircrews, allowing them to engage the threat or maneuver to break the targeting. The system detects aircraft illumination by laser rangefinders, laser target designators, and laser beam rider surface-to-air missiles. The system provides the aircrew visual and aural warnings prioritized by threat lethality using 360 degree azimuth and 90 degree elevation field of view coverage.

AZ3511 Radio Frequency CM

APO = 1,200 (APO based on B-Kits)

The objective of the Aircraft Survivability Equipment (ASE) Development project is to improve Radio Frequency (RF) ASE for Army aviation. The APR-39 Radar Warning Receiver (RWR) detects, categorizes, and prioritizes Radio Frequency (RF) emitters and provides a visual / aural alert to aircrew members warning them of targeting by RF-guided weapons. The Milestone Decision Authority (MDA) approved Phases 1 and 2 of a 3-phased path forward.

Phase 1, APR-39C(V)1/4, serves as an obsolescence / sustainment upgrade to the Processor Line Replaceable Unit (LRU) of the AN/APR-39A(V) Radar Warning Receiver (RWR) implemented to ensure that the currently fielded system remains viable until affordable improved RF ASE capability can be pursued in Phases 2 and 3.
Phase 2A is RWR Modernization begins by adopting the United States Navy APR-39D(V)2 system. APR-39D(V)2 will significantly improve the RF threat coverage, automatic detection and identification of threat types, bearing, and lethality. Phase 2B, the APR-39E(V)2 (MRWR), is an Army Engineering Change Proposal (ECP) to the APR-39D(V)2 that will implement enhanced hardware and software upgrades to keep the APR-39 technically relevant against new and emerging agile threats.

Phase 3 adds active Electronic Countermeasures (ECM) jamming capability for selected aircraft; Material Development Decision (MDD) for this ECM jamming capability phase is not expected until later in the Future Years Defense Program (FYDP).

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**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
10: Ground Support Avionics

**P-1 Line Item Number / Title:**
3632AZ3504 - Aircraft Survivability Equipment

**ID Code (A=Service Ready, B=Not Service Ready):**
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

**Line Item MDAP/MAIS Code:** N/A

### Exhibits Schedule

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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<tbody>
<tr>
<td>P-5</td>
<td>AZ3508 / ASE Laser CM</td>
<td></td>
<td></td>
<td>- / 430.935</td>
<td>- / 11.961</td>
<td>- / 6.035</td>
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<td>P-5</td>
<td>AZ3511 / Radio Frequency CM</td>
<td>P-5a</td>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

### Justification:

AZ3508 ASE Laser CM: Fiscal Year (FY) 2020 Base procurement dollars in the amount of $5.944 million supports CH-47F/UH-60L A-Kit installation on Rotary Wing aircraft in support of required operational capabilities and integration of AN/AVR-2B LDS with other ASE systems.

AZ3511 Radio Frequency CM: Fiscal Year (FY) 2020 Base Procurement dollars in the amount of $46.353 million funds procurement and fielding of APR-39D(V)2 A-Kits and B-Kits on aircraft, systems test and evaluation, mission data set (MDS), other software, training, depot stand up, other logistics, and systems engineering and program management.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
<table>
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<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<td>6.035</td>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

| Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding. |

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<tr>
<th>Cost Elements</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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**Exhibit P-5, Cost Analysis: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
3632AZ3504 / Aircraft Survivability Equipment

**Item Number / Title [DODIC]:**
AZ3508 / ASE Laser CM

**ID Code (A=Service Ready, B=Not Service Ready):**

**MDAP/MAIS Code:**

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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<th>Cost Elements</th>
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<th>FY 2020 Base</th>
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**Secondary Distribution**

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### Exhibit P-5, Cost Analysis: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031 A / 04 / 10

#### P-1 Line Item Number / Title:
3632AZ3504 / Aircraft Survivability Equipment

#### Item Number / Title [DODIC]:
AZ3511 / Radio Frequency CM

### Resource Summary

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<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

#### Initial Spares ($ in Millions)
- FY 2019: 93.790
- FY 2020 OCO: 1.100
- FY 2020 Total: 8.025

#### Gross/Weapon System Unit Cost ($ in Thousands)
- FY 2019: 1,713.844
- FY 2020 OCO: -
- FY 2020 Total: -

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

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<th>Qty (Each)</th>
<th>Total Cost</th>
<th>Unit Cost</th>
<th>Qty (Each)</th>
<th>Total Cost</th>
<th>Unit Cost</th>
<th>Qty (Each)</th>
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<tbody>
<tr>
<td><strong>Flyway Cost</strong></td>
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**Hardware Cost**

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<th>Qty (Each)</th>
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<th>Qty (Each)</th>
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**FY 2018**

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**Hardware Cost**

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### Cost Analysis: FY 2020

**P-1 Line Item Number / Title:** Aircraft Survivability Equipment

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**Secondary Distribution**

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Exhibit P-5, Cost Analysis: PB 2020 Army

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(†) indicates the presence of a P-5a

LI 3632AZ3504 - Aircraft Survivability Equipment

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LI 3632AZ3504 - Aircraft Survivability Equipment

Army

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P-1 Line #35
**Exhibit P-5a, Procurement History and Planning:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
3632AZ3504 / Aircraft Survivability Equipment

**Item Number / Title [DODIC]:**
AZ3511 / Radio Frequency CM

**Date:** March 2019

### Cost Elements | O C O | FY | Contractor and Location | Method/Type or Funding Vehicle | Location of PCO | Award Date | Date of First Delivery | Qty (Each) | Unit Cost ($K) | Specs Avail Now? | Date Revision Available | RFP Issue Date |
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**Remarks:**
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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA 5044AZ3507 / Survivability CM

Date: March 2019

P-1 Line Item Number / Title: 5044AZ3507 - Survivability CM

ID Code (A=Service Ready, B=Not Service Ready): A

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary

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The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |
| Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - |

Description:

The Advanced Threat Infrared Countermeasure (ATIRCM) is an infrared (IR) countermeasure system that interfaces with the Common Missile Warning System (CMWS) to provide near spherical protection of the host aircraft platform in order to defeat IR threat missiles. The operational concept of ATIRCM is as part of the Suite of Integrated Infrared Countermeasures (SIIRCM). The core components of the SIIRCM concept are: a Missile Warning System (MWS), expendable countermeasures (flares) and a laser based IR countermeasure (IRCM). The CMWS detects, declares, and initiates IRCM against IR-guided Surface-to-Air Missiles (SAM) or Air-to-Air Missiles (AAM). ATIRCM takes a hand-off cue from CMWS and then takes immediate action as a laser based countermeasure against the incoming threat missile.

The A-Kit for ATIRCM includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The ATIRCM B-Kit is the mission kit (laser, optical coupler, infrared jam head, and jam head control unit) required to achieve near spherical coverage for an aircraft.

The ATIRCM program is a post-Milestone C, Acquisition Category (ACAT) 1C program of record fielded on CH-47F aircraft.

The approved Army Acquisition Objective (AAO) for ATIRCM is 340 A-Kits and 120 B-Kits.

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LI 5044AZ3507 - Survivability CM

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P-1 Line #36
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
10: Ground Support Avionics

P-1 Line Item Number / Title: 5044AZ3507 / Survivability CM

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule

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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Base Procurement dollars in the amount of $8.388 million support software concurrency/maintenance, system testing, software engineering/program management, A-Kit/Pod Bay door installations, and support across the CH-47F aircraft fleet.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic responses, and providing military support to civil authorities.

All COMPO 1 Active
### Resource Summary

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*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

### Initial Spares ($ in Millions)

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<th>Prior Years</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
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### Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 10  
**P-1 Line Item Number / Title:** 5044AZ3507 / Survivability CM  
**Item Number / Title [DODIC]:** AZ3507 / Survivability CM

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<tr>
<th>Cost Elements</th>
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<th>FY 2020 OCO</th>
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<td>Total Cost ($ M)</td>
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<td>Recurring Cost</td>
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<td>Software Support</td>
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<td>Subtotal: Recurring Cost</td>
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<td>Subtotal: Software Cost</td>
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<td>Gross/Weapon System Cost</td>
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<td>5.853</td>
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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

(†) indicates the presence of a P-5a
### Exhibit P-5a, Procurement History and Planning: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5044AZ3507 / Survivability CM

**Item Number / Title [DODIC]:**
AZ3507 / Survivability CM

**Date:** March 2019

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<th>Location of PCO</th>
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<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
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<th>Revision Available</th>
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<td>Aviation Field Maint Division / Redstone Arsenal, AL</td>
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**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
10: Ground Support Avionics

**P-1 Line Item Number / Title:**
5397AZ3517 / CMWS

**ID Code (A=Service Ready, B=Not Service Ready):** N/A

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** 0605051A

**Resource Summary**

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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<tr>
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<td>130.219</td>
<td>144.218</td>
<td>140.796</td>
<td>10.040</td>
<td>8.277</td>
<td>8.514</td>
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<td>144.218</td>
<td>140.796</td>
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<td>8.277</td>
<td>8.514</td>
<td>-</td>
<td>1,343.668</td>
</tr>
</tbody>
</table>

*(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)*

**Description:**

Common Missile Warning System (CMWS):

Army Procurement Objective (APO) = 1,351 (B-Kits)

The CMWS program is a missile warning system that cues both flame and laser-based countermeasures to defeat incoming Infrared (IR)-seeking missiles and will alert aircrews to the presence of certain incoming unguided munitions. The B-Kit consists of the components which perform the missile detection and aircrew notification, unguided munitions detection and aircrew notification, false alarm rejection, and countermeasure employment/cueing functions of the system. The CMWS Electronic Control Unit (ECU) receives ultraviolet (UV) missile detection data from Electro-Optic Missile Sensors (EOMS), which detects UV signals, and sends a missile alarm signal to warn aircrews via on-board avionics. Tier 1 threat missiles detected and tracked by the CMWS are subsequently defeated by a combination of missile seeker countermeasures, including decoy flares and IR Laser Jamming (currently Advanced Threat Infrared Countermeasures (ATIRCM)-equipped CH-47 platform only). In addition, the CMWS ECU receives from the EOMS unguided munitions detection data which is also passed to the aircrew through aural and visual cues. The aircrew then applies the appropriate Tactics, Techniques and Procedures (TTPs) to break contact or engage the enemy with on-ship ordnance. The CMWS Generation 3 (Gen 3) ECU in conjunction with ongoing software development efforts will address outstanding materiel release conditions to achieve a Full Materiel Release (FMR) for CMWS and ensure protection against emerging IR-guided missile threats.

The A-Kit for CMWS includes mounting hardware, wiring harnesses, cables, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type.

**JUONS/CIRCM QRC:**

APO = 42 (B-Kits)

As a part of Phase 2a of the JUONS (SO-0010) program, the Army has now integrated the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system onto the Apache, Blackhawk, and Chinook platforms. Due to a number of challenges, circumstances, and variables, the Army updated the ATW/CIRCM QRC and LIMWS Directed Requirements (dated 16 November 2018). The updated requirements extend the utilization of ATW DoN LAIRCM on conventional Army aircraft and cancel the need for the ATW/CIRCM QRC system for the conventional Army. *(It should be noted that the updated requirement maintains the need for ATW/CIRCM on the Special Operations aircraft.)* As a result, the Army will no longer acquire the ATW sensors for use in Phase 3 of the JUONS effort. Instead, the Army will accelerate the procurement of the CIRCM QRC systems for use with the currently fielded Common Missile Warning System (CMWS) in preparation for transition to the Limited Interim Missile Warning System (LIMWS) system when available.
Limited Interim Missile Warning System (LIMWS) QRC:

APO = 399 (B-Kits)
Phase 4 Limited Interim Missile Warning System (LIMWS) QRC; Phase 4 LIMWS QRC addresses the HQDA Directed Requirement to provide a greater capability than the current program of record (POR), CMWS, to bridge the gap between CMWS and the future POR.

Joint Staff, J-8 Deputy Director for Requirements (DOR) memorandum, April 24, 2015
Phase 2a SOCOM JUONs S0-0010, Joint Rapid Acquisition Cell (JRAC) memorandum, May 29, 2015
Directed Requirement for the Phase 3 ATW/CIRCM QRC to Support Joint Urgent Operational Need (JUON) S0-0010, CIRCM Critical Intelligence Parameters Breach, December 18, 2015
Directed Requirement for the Phase 4 LIMWS QRC, March 26, 2017

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**UNCLASSIFIED**

**Exhibit P-40, Budget Line Item Justification:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA 5397AZ3517 / CMWS
10: Ground Support Avionics

**P-1 Line Item Number / Title:**
5397AZ3517 - CMWS

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** 0605051A

**Line Item MDAP/MAIS Code:** N/A

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**Exhibits Schedule**

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<th>MDAP/MAIS Code</th>
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<th>Quantity / Total Cost (Each / $ M)</th>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Justification:**

Common Missile Warning System (CMWS): Fiscal Year (FY) 2020 Base procurement dollars in the amount of $13.999 million supports CMWS software modifications, software concurrency, contractor support, and system test and evaluation (ST&E) efforts.

JUONS Phase 2a DoN LAIRCM and Phase 3 CIRCM QRC: FY 2020 Overseas Contingency Operations (OCO) procurement dollars in the amount of $16.750 million supports program management, systems engineering, software, and fielding support.

Phase 3 CIRCM QRC: FY2020 OCO procurement dollars in the amount of $6.530 million supports installation of QRC A-Kit, ST&E, Program Management and field support.

Phase 4 Limited Interim Missile Warning System (LIMWS) QRC: FY 2020 OCO Procurement dollars in the amount of $106.939 million fund LIMWS QRC B-Kits (100), A-Kits (185), installation and fielding, and Systems Engineering Program Management (SEPM).

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

All COMPO 1 Active
**Exhibit P-5, Cost Analysis:** PB 2020 Army  

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 10  

**P-1 Line Item Number / Title:** 5397AZ3517 / CMWS  

**Item Number / Title [DODIC]:** AZ3517 / CMWS

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**Resource Summary**

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<tr>
<td>Procurement Quantity (Units in Each)</td>
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<td>Net Procurement (P-1) ($ in Millions)</td>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
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**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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### Prior Years

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<th>FY 2019</th>
<th>FY 2020 Base</th>
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<th>FY 2020 Total</th>
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### Hardware Cost

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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)
## Exhibit P-5, Cost Analysis: PB 2020 Army

### Prior Years

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<th>Cost Elements</th>
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**Exhibit P-5, Cost Analysis: PB 2020 Army**

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 04 / 10  
P-1 Line Item Number / Title: 5397AZ3517 / CMWS

**Item Number / Title [DODIC]: AZ3517 / CMWS**

**ID Code** (A=Service Ready, B=Not Service Ready) :

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Prior Years

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(†) indicates the presence of a P-5a
**Exhibit P-5a, Procurement History and Planning:** PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 10

**P-1 Line Item Number / Title:** 5397AZ3517 / CMWS

**Item Number / Title [DODIC]:** AZ3517 / CMWS

**Date:** March 2019

### Cost Elements

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| Phase 3 CIRCM QRC B-Kit Procurement | 2018 | Northrop Grumman / Rolling Meadows, IL | SS / FFP | AMCOM Contracting Command, RSA | Dec 2017 | Dec 2018 | 64 | 1,015.344 | N |
| Phase 4 LIMWS A-Kit Procurement and Install(†) | 2019 | BAE Systems / Nashua, NH | C / FFP | AMCOM Contracting Command, RSA | Nov 2018 | May 2019 | 36 | 250.861 | N |
| Phase 4 LIMWS A-Kit Procurement and Install(†) | 2020 | TBD / TBD | C / FFP | AMCOM Contracting Command, RSA | Oct 2019 | Apr 2020 | 133 | 72.780 | N |
| Phase 4 LIMWS QRC B-Kit Procurement(†) | ✓ 2020 | BAE Systems / Nashua, NH | C / FFP | AMCOM Contracting Command, RSA | Oct 2019 | Apr 2020 | 50 | 72.780 | N |
| Phase 4 LIMWS QRC B-Kit Procurement(†) | 2018 | BAE Systems / Nashua, NH | C / FFP | AMCOM Contracting Command, RSA | May 2018 | Aug 2019 | 36 | 810.833 | N |
| Phase 4 LIMWS QRC B-Kit Procurement(†) | 2019 | BAE Systems / Nashua, NH | C / FFP | AMCOM Contracting Command, RSA | Apr 2019 | Apr 2020 | 100 | 459.650 | N |
| Phase 4 LIMWS QRC B-Kit Procurement(†) | ✓ 2020 | BAE Systems / Nashua, NH | C / FFP | AMCOM Contracting Command, RSA | Jan 2020 | Mar 2021 | 100 | 897.000 | N |

(†) indicates the presence of a P-21

**Remarks:**

Directed Requirement #3 tasked LIMWS concurrent installation with CIRCM to a designated unit beginning in 4QFY19.

A-kits: Initial Production quantity of 36 A-kits was procured in 1QFY2019 (November). Full Production of A-kits are scheduled for procurement of 183 A-kits in 1QFY2020.

B-kits: Initial Production quantity of 36 B-kits was procured in 2QFY2018 (May). Contract option for Full Production requires a minimum order quantity of 100 B-kits. Additional FY2019 OCO funding of $62.6M is required to execute the minimum procurement option for 100 B-kits. Total FY2019 OCO requirement is $85.4M.
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 10

**P-1 Line Item Number / Title:** 5397AZ3517 / CMWS

**Item Number / Title [DODIC]:** AZ3517 / CMWS

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**Cost Elements (Units in Each):**

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**Phase 4 LIMWS A-Kit Procurement and Install**

- **2019**
  - **ARMY**: 36 0 36
  - **BAL**: A - - - - - - 4 2 2 2 2 24

- **2020**
  - **ARMY**: 133 0 133

**Phase 4 LIMWS QRC B-Kit Procurement**

- **2018**
  - **ARMY**: 36 0 36
  - **BAL**: A - - - - - - - - - - - - 3 3 3 30

- **2019**
  - **ARMY**: 100 0 100
  - **BAL**: A - - - - - - - - - - - - - - - 100

- **2020**
  - **ARMY**: 100 0 100

---

UNCLASSIFIED
### Exhibit P-21, Production Schedule: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
2031A / 04 / 10

#### P-1 Line Item Number / Title:
5397AZ3517 / CMWS

#### Item Number / Title [DODIC]:
AZ3517 / CMWS

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**Exhibit P-21, Production Schedule:**

**PB 2020 Army**

**Date:** March 2019

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**Cost Elements (Units in Each)**

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**Fiscal Year 2020**

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**Phase 4 LIMWS A-Kit Procurement and Install**

- **2019**
  - ARMY: 36, 12, 24
  - QTY: 3, 3, 3, 3, 3, 3, 3
  - BAL DUE AS OF 1 OCT 2019: 0

- **2020**
  - ARMY: 133, 0, 133
  - QTY: A, -1, -, -, -
  - BAL DUE AS OF 1 OCT 2019: 16, 16, 16, 15, 15, 7, 8

**Phase 4 LIMWS QRC B-Kit Procurement**

- **2018**
  - ARMY: 36, 6, 30
  - QTY: 3, 3, 3, 3, 3, 3, 3
  - BAL DUE AS OF 1 OCT 2019: 0

- **2019**
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  - QTY: -1, -1, -1, -1
  - BAL DUE AS OF 1 OCT 2019: 10, 10, 10, 10

- **2020**
  - ARMY: 100, 0, 100
  - QTY: A, -1, -1, -1
  - BAL DUE AS OF 1 OCT 2019: 10, 10, 10, 10, 10, 10, 30
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 10

**P-1 Line Item Number / Title:** 5397AZ3517 / CMWS

**Item Number / Title [DODIC]:** AZ3517 / CMWS

**Date:** March 2019

---

#### Phase 4 LIMWS A-Kit Procurement and Install

<table>
<thead>
<tr>
<th>Cost Elements (Units in Each)</th>
<th>Fiscal Year 2022</th>
<th>Calendar Year 2022</th>
<th>Fiscal Year 2023</th>
<th>Calendar Year 2023</th>
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#### Phase 4 LIMWS QRC B-Kit Procurement

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<td>✓ 2019 ARMY</td>
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<td>100 100 0</td>
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<tr>
<td>✓ 2020 ARMY</td>
<td>100 70 30</td>
<td>10 10 10</td>
<td>10 10 10</td>
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### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5397AZ3517 / CMWS

**Item Number / Title [DODIC]:**
AZ3517 / CMWS

**Date:** March 2019

#### Production Rates (Each / Month)

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<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>MSR For 2020</th>
<th>1-8-5 For 2020</th>
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<td>TBD - TBD</td>
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<td>10</td>
<td>16</td>
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<tr>
<td>2</td>
<td>BAE Systems - Nashua, NH</td>
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<td>3</td>
<td>BAE Systems - Nashua, NH</td>
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#### Procurement Leadtime (Months)

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<th>Reorder</th>
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<td>ALT After Oct 1</td>
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#### Remarks:
- LIMWS QRC: Competitive Contract was awarded December 2017.
- "A" in the Delivery Schedule indicates the Contract Award Date.
- **Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999, all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
### Army

#### Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA

**P-1 Line Item Number / Title:**
5399AZ3537 / Common Infrared Countermeasures (CIRCM)

**ID Code** (A=Service Ready, B=Not Service Ready):

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

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<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024 To Complete</th>
<th>Total</th>
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<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>108.721</td>
<td>80.677</td>
<td>60.899</td>
<td>168.784</td>
<td>9.310</td>
<td>178.094</td>
<td>247.014</td>
<td>215.744</td>
<td>252.769</td>
<td>332.713</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>108.721</td>
<td>80.677</td>
<td>60.899</td>
<td>168.784</td>
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<td>178.094</td>
<td>247.014</td>
<td>215.744</td>
<td>252.769</td>
<td>332.713</td>
</tr>
</tbody>
</table>

(Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
| Flyaway Unit Cost ($ in Thousands) | 1,411.961 | 1,494.019 | 1,845.424 | 2,083.753 | - | 2,198.691 | 2,058.450 | 2,136.079 | 2,022.152 | 2,661.704 | - | 2,062.334 |

#### Description:

Army Procurement Objective (APO) = 1,781 (B-Kits only)

The Common Infrared Countermeasure (CIRCM) budget line includes 1) CIRCM (AZ3537), 2) funding to counter emerging technology as identified in Joint Urgent Operational Needs Statement (JUONS) SO-0010 Phase 2a and the Headquarters Department of the Army (HQDA) Directed Requirement for the Common Infrared Countermeasures Quick Reaction Capability (CIRCM QRC), and 3) funding to support HQDA Directed Requirement for the Limited Interim Missile Warning System (LIMWS) Quick Reaction Capability (QRC). The directed change in strategy for the CIRCM QRC enabled the program office to gain efficiencies in A-Kit development, integration & test activities that helped to mitigate the $20M decrement received in FY19.

CIRCM (AZ3537)

The Common Infrared Countermeasure (CIRCM) is the next generation lightweight, laser-based Infrared Countermeasure (IRCM) component that will interface with both the Army's Common Missile Warning System (CMWS) and future missile warning systems (MWS) to defeat current and emerging missile threats that use multispectral technology for rotary-wing, tilt-rotor and small fixed-wing aircraft across the DoD. CIRCM receives an angular bearing hand-off from the MWS, employs a pointing and tracking system which acquires the handed-over threat and tracks the incoming missile during and after motor burnout. CIRCM jams the missile by using modulated laser energy in the missile seeker band, thus degrading the tracking capability of the missile and causing it to miss the aircraft. CIRCM is utilizing Open Systems Architecture which allows flexibility with software and hardware refreshes to keep pace with future threats.

The CIRCM A-Kit includes mounting hardware, wiring harnesses, and other components necessary to install and interface the mission kit on host aircraft. The A-Kit ensures the mission kit is functionally and physically operational with a specific host aircraft type. The CIRCM B-Kit is the mission kit (laser, pointer tracker, and controller) required to achieve near spherical coverage for an aircraft.

**JUONS SO-0010 and CIRCM QRC**

As a part of Phase 2a of the JUONS (SO-0010) program, the Army has now integrated the Department of the Navy Large Aircraft Infrared Countermeasure (DoN LAIRCM) system onto the Apache, Blackhawk, and Chinook platforms. Due to a number of challenges, circumstaces, and variables, the Army updated the ATW/CIRCM QRC and LIMWS Directed Requirements (dated 16 November 2018). The updated requirements extend the utilization of ATW DoN LAIRCM on conventional Army aircraft and cancel the need for the ATW/CIRCM QRC system for the conventional Army. (It should be noted that the updated requirement maintains the need for ATW/CIRCM on the Special Operations aircraft.) As a result, the Army will no longer acquire the ATW sensors for use in Phase 3 of the JUONS effort. Instead, the Army will accelerate the procurement of the CIRCM QRC systems for use with the currently fielded Common Missile Warning System (CMWS) in preparation for transition to the Limited Interim Missile Warning System (LIMWS) system when available.
CIRCM MS C was approved September 14, 2018, the Low Rate Initial Production (LRIP) and Engineering Support options were exercised and the program entered the Production & Deployment phase with First Unit Equipped (FUE) planned for third quarter of FY 2020, and a Full Rate Production Decision Review (FRPDR) planned for the third quarter of FY 2020. During the MS C approval process the CSA directed funding increase beginning FY20 to accelerate CIRCM production Initial Operational Test (IOT) field a Combat Aviation Brigade (CAB) per year.

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<tr>
<td>Total Obligation Authority</td>
<td>80.677</td>
<td>60.899</td>
<td>168.784</td>
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<tr>
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<td>178.094</td>
<td>247.014</td>
<td>215.744</td>
<td>252.769</td>
</tr>
</tbody>
</table>
**Exhibit P-40, Budget Line Item Justification: PB 2020 Army**

**Justification:**

FY 2020 Base procurement dollars in the amount of $168.784 million will fund procurement of CIRCM hardware, integration, testing, Systems Engineering Program Management (SEPM), and fielding.

FY 2020 OCO procurement dollars in the amount of $9.310 million will fund CIRCM QRC integration, System Test and Evaluation (ST&E), SEPM, and fielding.

As a result of the Milestone C decision on September 14, 2018, the PB2020 submission supports an approved ACP and APB update.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.

All COMPO 1 Active

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**Exhibits Schedule**

<table>
<thead>
<tr>
<th>Exhibit Type</th>
<th>Title*</th>
<th>Subexhibits</th>
<th>ID Code</th>
<th>MDAP/MAIS Code</th>
<th>Quantity / Total Cost (Each) / ($ M)</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
</tr>
</thead>
</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**

2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA 10: Ground Support Avionics

**P-1 Line Item Number / Title:**

5399AZ3537 / Common Infrared Countermeasures (CIRCM)
### Exhibit P-5, Cost Analysis: PB 2020 Army

#### Appropriation / Budget Activity / Budget Sub Activity:
- 2031A / 04 / 10

#### P-1 Line Item Number / Title:
- 5399AZ3537 / Common Infrared Countermeasures (CIRCM)

#### Item Number / Title [DODIC]:
- AZ3537 / Common Infrared Countermeasures (CIRCM)

#### ID Code (A=Service Ready, B=Not Service Ready):

#### MDAP/MAIS Code:

**Resource Summary**

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<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
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<td>178.094</td>
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<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>108.721</td>
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<td>60.899</td>
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<td>178.094</td>
</tr>
<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td>-</td>
</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>108.721</td>
<td>80.677</td>
<td>60.899</td>
<td>168.784</td>
<td>9.310</td>
<td>178.094</td>
</tr>
</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

**Initial Spares ($ in Millions)**
- - - - - -

**Gross/Weapon System Unit Cost ($ in Thousands)**
- 1,411.961 - 1,494.019 - 1,845.424 - 2,083.753 - 2,198.691

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

#### Cost Elements

<table>
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<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
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<th>FY 2019</th>
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<th>FY 2020 OCO</th>
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**FY 2020 Total**
Exhibit P-5, Cost Analysis: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 04 / 10

P-1 Line Item Number / Title: 5399AZ3537 / Common Infrared Countermeasures (CIRCM)

Item Number / Title [DODIC]: AZ3537 / Common Infrared Countermeasures (CIRCM)

ID Code (A=Service Ready, B=Not Service Ready):

MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<td>Support - Fielding Cost</td>
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</tr>
<tr>
<td>Subtotal: Support - System Test and Evaluation Cost</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Support - Training Cost</td>
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<td>-</td>
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<tr>
<td>Services</td>
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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

Date: March 2019
**Exhibit P-5, Cost Analysis: PB 2020 Army**

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5399AZ3537 / Common Infrared Countermeasures (CIRCM)

**Item Number / Title [DODIC]:**
AZ3537 / Common Infrared Countermeasures (CIRCM)

**MDAP/MAIS Code:**

**Note:** Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Unit Cost ($ K)</td>
<td>Qty (Each)</td>
<td>Unit Cost ($ M)</td>
<td>Unit Cost ($ K)</td>
<td>Qty (Each)</td>
<td>Unit Cost ($ M)</td>
</tr>
<tr>
<td>Subtotal: Support - Training Cost</td>
<td>-</td>
<td>-</td>
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<td>Gross/Weapon System Cost</td>
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<tbody>
<tr>
<td>Army</td>
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<td>-</td>
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<tr>
<td>Total Obligation Authority</td>
<td>80.677</td>
<td>60.899</td>
<td>168.784</td>
<td>9.310</td>
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<td>Quantity</td>
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<tr>
<td>Total Obligation Authority</td>
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<td>60.899</td>
<td>168.784</td>
<td>9.310</td>
<td>178.094</td>
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(†) indicates the presence of a P-5a
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<th>Location of PCO</th>
<th>Award Date</th>
<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
<th>Spec Avail Now?</th>
<th>Date Revision Available</th>
<th>RFP Issue Date</th>
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(†) indicates the presence of a P-21
### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5399AZ3537 / Common Infrared Countermeasures (CIRCM)

**Item Number / Title [DODIC]:**
AZ3537 / Common Infrared Countermeasures (CIRCM)

#### Cost Elements (Units in Each)

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<th>O/C</th>
<th>FY</th>
<th>SERVICE</th>
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<th>BAL DUE AS OF 1 OCT</th>
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<th>Calendar Year 2018</th>
<th>Fiscal Year 2019</th>
<th>Calendar Year 2019</th>
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#### CIRCM B-Kit Manufacturing

<table>
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<th>FY</th>
<th>SERVICE</th>
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<th>BAL DUE AS OF 1 OCT</th>
<th>Fiscal Year 2018</th>
<th>Calendar Year 2018</th>
<th>Fiscal Year 2019</th>
<th>Calendar Year 2019</th>
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<td>1</td>
<td>2018</td>
<td>ARMY</td>
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<tr>
<td>1</td>
<td>2019</td>
<td>ARMY</td>
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### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5399AZ3537 / Common Infrared Countermeasures (CIRCM)

**Item Number / Title [DODIC]:**
AZ3537 / Common Infrared Countermeasures (CIRCM)

---

**Cost Elements (Units in Each)**

<table>
<thead>
<tr>
<th>Service</th>
<th>Fiscal Year 2020</th>
<th>Calendar Year 2020</th>
<th>Fiscal Year 2021</th>
<th>Calendar Year 2021</th>
</tr>
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<tr>
<td><strong>CIRCM B-Kit Manufacturing</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 2018 ARMY</td>
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<td>- - - - - - 2 3 3 3 3 2 2 3 3</td>
<td>0</td>
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</tr>
<tr>
<td>1 2019 ARMY</td>
<td>24 15 9</td>
<td>3 3 2 1</td>
<td>0</td>
<td></td>
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<tr>
<td>1 2020 ARMY</td>
<td>81 0 81</td>
<td>A - - - - - - - - - - - - 12 11 9 9 9 9 10 3 0</td>
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### Exhibit P-21, Production Schedule: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 10

**P-1 Line Item Number / Title:**
5399AZ3537 / Common Infrared Countermeasures (CIRCM)

**Item Number / Title [DODIC]:**
AZ3537 / Common Infrared Countermeasures (CIRCM)

<table>
<thead>
<tr>
<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>Production Rates (Each / Month)</th>
<th>Procurement Leadtime (Months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Northrop Grumman Systems Corp - Rolling Meadows</td>
<td>MSR For 2020 1-8-5 For 2020 MAX For 2020</td>
<td>Initial Reorder</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 15 25</td>
<td>0 10 0 0 0 0 0 0</td>
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</table>

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
Description:
The Aviator's Night Vision Imaging System (ANVIS), supports the Army’s objectives by permitting superior tactical mobility of rotary wing aircraft during darkness and low light conditions. ANVIS also supports Fixed Wing Lift permitting loading/unloading and flight during darkness and low light conditions. ANVIS is a binocular, helmet-mounted system for Aviation crew members. ANVIS is a night vision goggle that significantly expands the input dynamic range to support operations in conditions that vary from below starlight illumination levels through strong urban lighting situations. The increased capability of ANVIS yields enhanced mission performance and improved safety of flight, compared to what is now possible using previous ANVIS systems. ANVIS enhances the survivability, lethality, and tactical mobility for aviators.

The Army Acquisition Objective (AAO) for this program is 16,902.

Justification:
FY 2020 Base procurement dollars in the amount of $1.777 million supports program management and fielding activities.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense mission, domestic emergency responses, and providing military support of civil authorities.
### Description:

Aviation Ground Support Equipment (AGSE) acquires, fields, and modernizes aviation equipment within cost, schedule, and performance parameters, allowing Army Aviation Soldiers to carry out peacetime and wartime missions. AGSE provides life cycle systems management for Aviation Ground Power Unit (AGPU), Aviation Light Utility Mobile Maintenance Cart (ALUMMC), Tool Set, Aviation Unit Maintenance (formerly Aviation Unit Maintenance Tool Sets), Modernized Maintenance Stands (MMS), Common Aviation Tool System (CATS), Flexible Engine Diagnostic System (FEDS), Self-propelled Crane Aircraft Maintenance and Positioning Increment II (SCAMP II) Type 2 (Expeditionary Variant), Unit Maintenance Aerial Recovery Kit (UMARK), Pitot Static Test Set (PSTS) and Non-Destructive Test Equipment (NDTE). AGSE is critical to achieving operational readiness requirements of Army Aviation Units.

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

### Resource Summary

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>Less FY Advance Procurement ($ in Millions)</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>1,232.023</td>
<td>47.404</td>
<td>34.818</td>
<td>18.624</td>
<td>-</td>
<td>18.624</td>
<td>18.825</td>
<td>16.121</td>
<td>16.455</td>
<td>17.429</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td>-</td>
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</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>1,232.023</td>
<td>47.404</td>
<td>34.818</td>
<td>18.624</td>
<td>-</td>
<td>18.624</td>
<td>18.825</td>
<td>16.121</td>
<td>16.455</td>
<td>17.429</td>
<td>-</td>
<td>1,401.699</td>
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</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Initial Spares ($ in Millions)

- FY 2018
- FY 2019
- FY 2020
- FY 2021
- FY 2022
- FY 2023
- FY 2024
- To Complete

### Flyaway Unit Cost ($ in Thousands)

- FY 2018
- FY 2019
- FY 2020
- FY 2021
- FY 2022
- FY 2023
- FY 2024

### Gross/Weapon System Unit Cost ($ in Thousands)

- FY 2018
- FY 2019
- FY 2020
- FY 2021
- FY 2022
- FY 2023
- FY 2024

### Secondary Distribution

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<tbody>
<tr>
<td>Army</td>
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<td>ANG</td>
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<tr>
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<td>Total Obligation Authority</td>
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<td>6.862</td>
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<td>Quantity</td>
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</tr>
<tr>
<td></td>
<td>Total Obligation Authority</td>
<td>47,404</td>
<td>34,818</td>
<td>18.624</td>
<td>-</td>
<td>18.624</td>
<td>18.825</td>
<td>16.121</td>
<td>16.455</td>
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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
30: Other Support

P-1 Line Item Number / Title:
5212AZ3100 / Common Ground Equipment

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: 0603801A, 0605830A

Line Item MDAP/MAIS Code: N/A

Exhibits Schedule

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<th>Quantity / Total Cost (Each) / ($ M)</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<td>- / 18.624</td>
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<tr>
<td>P-49</td>
<td>Total Gross/Weapon System Cost</td>
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<td>- / -</td>
<td>- / -</td>
<td>- / 18.624</td>
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*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Base procurement dollars in the amount of $2.898 million procures Aviation Ground Power Units.
FY 2020 Base procurement dollars in the amount of $0.250 million funds fielding of FEDS.
FY 2020 Base procurement dollars in the amount of $6.259 million procures and fields the Self-propelled Crane Aircraft Maintenance and Positioning Increment II, Type 2 (Expeditionary Variant).
FY 2020 Base procurement dollars in the amount of $9.217 million procures and fields the Pitot Static Test Set.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
### Resource Summary

<table>
<thead>
<tr>
<th>Cost Elements</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Cost ($K)</td>
<td>Qty (Each)</td>
<td>Total Cost ($M)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit Cost ($K)</td>
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</table>

### Note
- Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
- Initial Spares ($ in Millions)
- Gross/Weapon System Unit Cost ($ in Thousands)

The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.
Exhibit P-5, Cost Analysis: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A / 04 / 30

P-1 Line Item Number / Title:
5212AZ3100 / Common Ground Equipment

Item Number / Title [DODIC]:
AZ3520 / AVIATION GROUND SUPPORT EQUIPMENT

ID Code (A=Service Ready, B=Not Service Ready):
MDAP/MAIS Code:

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

### Cost Elements

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<tr>
<th>Prior Years</th>
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<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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<td>- -</td>
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### Secondary Distribution

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<th>FY 2020 Base</th>
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<td>18.624</td>
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</table>
Description:

Aircrew Integrated Systems funds Air Warrior and Air Soldier System Aviation Life Support Equipment efforts. The Air Warrior (AW) is the legacy Aviation Life Support Equipment system that provides Army rotary wing aircrews with protective mission and survival equipment. The AW consists of Clothing and Individual Equipment and mission electronics integrated with the aircraft that enable the crew member to successfully perform the mission as well as protect, sustain, and assist in the safe return to friendly forces in the event of a downed aircraft scenario. The Air Soldier System (Air SS) is the phased replacement of the AW that addresses AW capability gaps, including crew station compatibility challenges due to the bulk of aircrew-worn protective equipment; lack of modern Situational Awareness tools available to the aviator; and soldier load. Air SS integrates with the aircraft platform and consists of modernized mission electronics, flight helmets, helmet-mounted displays and symbology, and provides improved protective clothing and individual survival equipment. The Air SS reduces soldier load by reducing the bulk and weight of the protective equipment worn by the crewmember, and enhances aircrew Situational Awareness and safety with a Computer Display System and improved helmet mounted displays/Electronic Flight Bag (EFB) that reduce cockpit workload and provide enhanced flight symbology for UH-60 and CH-47 crewmembers.
UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army
Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
6380AZ3110 / Aircrew Integrated Systems
30: Other Support

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: 0603827A, 0604601A

Line Item MDAP/MAIS Code: N/A

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<th>ID</th>
<th>Title*</th>
<th>Subexhibits</th>
<th>MDAP/MAIS Code</th>
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<th>Quantity / Total Cost ($ M)</th>
<th>Quantity / Total Cost (Each)</th>
<th>Quantity / Total Cost ($ M)</th>
<th>Quantity / Total Cost (Each)</th>
<th>Quantity / Total Cost ($ M)</th>
<th>Quantity / Total Cost (Each)</th>
<th>Quantity / Total Cost ($ M)</th>
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</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY2020 Base procurement dollars in the amount of $48.255 million supports Engineering Changes to Air Warrior components that support Air Soldier System requirements, and production and fielding of Air SS capability. Air SS provides improved flight helmets; a Computer and Display System for UH-60L aviators that provides digital moving map/situational awareness and Blue Force Tracking capability; improved lightweight body armor; improved environmental protective clothing and personal survival equipment; a day/night helmet-mounted display for UH-60 and CH-47 aviators; and the Electronic Flight Bag (EFB), a digital replacement for paper DoD Flight Information Publications and aircraft publications. These capabilities reduce Soldier load and enhance their Situational Awareness, Safety, and Survivability. Funds also procure Air Soldier platform-mounted components necessary for airframe interface with the Air Soldier; and installation of airframe integration kits.

Funding procures equipment and materiel to support a balanced investment strategy in support of the Army Acquisition Objective.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
## Resource Summary

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

## Cost Elements

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<th>Cost Elements</th>
<th>Unit Cost ($ K)</th>
<th>Qty (Each)</th>
<th>Total Cost ($ M)</th>
<th>Unit Cost ($ K)</th>
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<th>Total Cost ($ M)</th>
<th>Unit Cost ($ K)</th>
<th>Qty (Each)</th>
<th>Total Cost ($ M)</th>
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Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.
### Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 30

**P-1 Line Item Number / Title:** 6380AZ3110 / Aircrew Integrated Systems

**Item Number / Title [DODIC]:** AZ3110 / Aircrew Integrated Systems

**Date:** March 2019

**UNCLASSIFIED**

**ID Code (A=Service Ready, B=Not Service Ready):**

**MDAP/MAIS Code:**

Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

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<th>Cost Elements</th>
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<th>FY 2020 Base</th>
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#### Secondary Distribution

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(†) indicates the presence of a P-5a
### Exhibit P-5a, Procurement History and Planning: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 30

**P-1 Line Item Number / Title:** 6380AZ3110 / Aircrew Integrated Systems

**Item Number / Title [DODIC]:** AZ3110 / Aircrew Integrated Systems

**Date:** March 2019

<table>
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<tr>
<th>Cost Elements</th>
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<th>Contractor and Location</th>
<th>Method/Type or Funding Vehicle</th>
<th>Location of PCO</th>
<th>Award Date</th>
<th>Date of First Delivery</th>
<th>Qty (Each)</th>
<th>Unit Cost ($K)</th>
<th>Specs Avail Now?</th>
<th>Date Revision Available</th>
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<td>Air SS Airframe Kits(*)</td>
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<td>218.000</td>
<td>Y</td>
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</tbody>
</table>

(*) indicates the presence of a P-21

**Remarks:**

Unit cost changes across the years reflect the different mix of subsystem components procured each year. The Air SS Airframe Kit subsystem component is a primary cost driver of the program and fluctuations in quantities in any given fiscal year can substantially change the overall program Unit Cost. The Air SS Soldier Kit subsystem component makes up the other bulk of hardware procured under this program that can also shift the overall program Unit Cost based on quantities bought. The subsystem component quantities for each fiscal year are shown on the P-5 cost elements.

Unit costs for Soldier Kit and Airframe Kit subsystem component cost elements are stable between FY19 and FY20 because the capabilities are the same.
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### Cost Elements

**Air SS Airframe Kits**

**Prior Years Deliveries:** 304

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<th>Accept Prior to 1 Oct 2015</th>
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**Note:** The table above shows the production schedule for Aircrew Integrated Systems, with deliveries listed for each fiscal year from 2016 to 2020.
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<thead>
<tr>
<th>O</th>
<th>M</th>
<th>C</th>
<th>R</th>
<th>FY</th>
<th>SERVICE</th>
<th>PROC</th>
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</table>
Exhibit P-21, Production Schedule: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A / 04 / 30

Date: March 2019

Item Number / Title: 6380AZ3110 / Aircrew Integrated Systems

Item Number / Title [DODIC]: AZ3110 / Aircrew Integrated Systems

### Exhibit P-21, Production Schedule

**Cost Elements** (Units in Each)

<table>
<thead>
<tr>
<th>Fiscal Year 2020</th>
<th>Calendar Year 2020</th>
<th>Fiscal Year 2021</th>
<th>Calendar Year 2021</th>
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<tbody>
<tr>
<td>O M C R O # FY SERVICE</td>
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<td>BAL DUE AS OF 1 OCT</td>
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</tbody>
</table>

**Air SS Airframe Kits**

Prior Years Deliveries: 304

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<tbody>
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</tbody>
</table>

**Note:**
- **FY** indicates Fiscal Year.
- **SERVICE** indicates the service involved.
- **PROC** indicates the production schedule.
- **QTY** indicates the quantity of units produced.
- **BAL** indicates the balance as of the specified date.
### Exhibit P-21, Production Schedule: PB 2020 Army

**Date:** March 2019

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A / 04 / 30

**P-1 Line Item Number / Title:**
6380AZ3110 / Aircrew Integrated Systems

**Item Number / Title [DODIC]:**
AZ3110 / Aircrew Integrated Systems

#### Production Rates (Each / Month)

<table>
<thead>
<tr>
<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>MSR For 2020</th>
<th>1-8-5 For 2020</th>
<th>MAX For 2020</th>
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<tbody>
<tr>
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<td>Various - Various</td>
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#### Procurement Leadtime (Months)

<table>
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<th>MFR Ref #</th>
<th>Manufacturer Name - Location</th>
<th>Initial Alt</th>
<th>Manufacturing PLT</th>
<th>Reorder Alt</th>
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<td>6</td>
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</tbody>
</table>

**Remarks:**
Air SS procurement utilizes Indefinite Delivery Indefinite Quantity Contract vehicles and therefore does not have Minimum Sustaining Rates; therefore, Monthly Production Rates are shown.

"A" in the Delivery Schedule indicates the Contract Award Date.

**Note:** Due to space limitations, quantities in the Exhibit P-21 delivery calendar are truncated and rounded based on the maximum quantity in the calendar as follows. If the maximum quantity is less than or equal to 9,999, all quantities are shown as each. If the maximum quantity is between 10,000 and 999,999 all quantities are shown in thousands. If the maximum quantity is between 1,000,000 and 999,999,999 all quantities are shown in millions (rounded to the nearest thousand). If the maximum quantity is equal or greater than 1,000,000,000 all quantities are shown in billions (rounded to the nearest million).
UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: P-1 Line Item Number / Title:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA 6818AA0050 / Air Traffic Control
30: Other Support

ID Code (A=Service Ready, B=Not Service Ready): Program Elements for Code B Items: N/A
Line Item MDAP/MAIS Code: N/A

Resource Summary | Prior Years | FY 2018 | FY 2019 | FY 2020 Base | FY 2020 OCO | FY 2020 Total | FY 2021 | FY 2022 | FY 2023 | FY 2024 To Complete | Total
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
Procurement Quantity (Units in Each) | - | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Cost ($ in Millions) | 1,525.161 | 78.790 | 63.872 | 32.738 | - | 32.738 | 37.332 | 34.044 | 34.219 | 33.988 | - | 1,840.144 |
Less PY Advance Procurement ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
Net Procurement (P-1) ($ in Millions) | 1,525.161 | 78.790 | 63.872 | 32.738 | - | 32.738 | 37.332 | 34.044 | 34.219 | 33.988 | - | 1,840.144 |
Plus CY Advance Procurement ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
Total Obligation Authority ($ in Millions) | 1,525.161 | 78.790 | 63.872 | 32.738 | - | 32.738 | 37.332 | 34.044 | 34.219 | 33.988 | - | 1,840.144 |

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions) | - | - | - | - | - | - | - | - | - | - | - | - |
Flyaway Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - | - |
Gross/Weapon System Unit Cost ($ in Thousands) | - | - | - | - | - | - | - | - | - | - | - | - |

Description:
Funds described herein support the acquisition of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enable safety of aircraft operations. In accordance with Federal Aviation Administration (FAA) mandates for systems operating in the National Airspace System (NAS), ATC systems are required to maintain compliance with civil, military, domestic and international air traffic control and combat identification requirements.

Efforts funded include the Tactical Airspace Integration System (TAIS), Air Traffic Navigation Integration and Coordination System (ATNAVICS), the Mobile Tower System (MOTS), the Tactical Terminal Control System (TTCS), and Fixed Base systems, such as the DoD Advanced Automation System (DAAS), the Digital Airport Surveillance Radar (DASR), and other navigational control aids to include the Army Airfield Automation System (AAAS), National Airspace System (NAS) Voice Switch, Doppler VHF Omnidirectional Range (DVOR) system, NAS Voice Recorder (NVR) and Precision Approach Radar (PAR).

TAIS is the Army's program of record for Airspace Control (AC) and enroute Air Traffic Services (ATS). Continued compatibility and interoperability with the Army Mission Command Information System (MCIS), requires development, testing and integration of new web-based services for AC into common MCIS hardware, while meeting the Common Operating Environment (COE) standards. Includes development and testing of improvements to the air picture to include fusion of Blue Force Tracker (BFT), radar, Identify Friend or Foe (IFF) and additional sensor feeds. TAIS develops software and hardware for ATS and AC missions to operate effectively in a dynamic net-centric interconnected environment to further enhance airspace integration and dynamic management capabilities for aviation gateway to mission command.

ATNAVICS is a PAR system that provides ATS at Army terminal airfields and landing sites at Division, Corps, and Echelons Above Corps to include services for Joint and Allied aircraft. ATNAVICS will integrate interrogator capabilities required to control aircraft both Outside of the Continental United States and within the Continental United States. ATNAVICS will network its radar picture and interrogator data to aviation and joint network nodes through TAIS.

TTCS is a mobile ATC communications system that provides initial ATS at remote landing sites and drop zones. It enables secure ground-to-air and ground-to-ground communications between Army aircraft, other services, Allied aircraft, and ground stations. TTCS also provides aircraft separation and ground control capabilities, a meteorological measuring system for basic weather information, Blue Force Tracker which provides near real time situational awareness and precision location capability.

MOTS provides ATC and aircraft separation for both air and ground operations at tactical or remote landing sites. It replaces the 1970's era mobile tower system. MOTS capabilities include weather information, secure and anti-jam communications across all required frequency bands and ranges and precision location.

LI 6818AA0050 - Air Traffic Control

UNCLASSIFIED
Page 1 of 5 P-1 Line #42
Fixed Base ATC requirements (DAAS, DASR, AAAS, DVOR, NVR, NAS Voice Switch) will be met through a vast array of new technology solutions and pre-planned product improvement (P3I) of these systems resulting in highly reliable and safe ATC systems in accordance with the Joint DoD/FAA program to modernize the NAS and the FAA Next Gen program.

Precision Approach Radar (PAR) 2020 provides precision approach capabilities at Army terminal airfields and landing sites at Division, Corps, and Echelons Above Corps to include services for Joint and Allied aircraft.

This exhibit is for a budget line that procures multiple items and does not have a single Army Acquisition Objective.

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<td>32.738</td>
<td>37.332</td>
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<td>33.988</td>
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</table>
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: P-1 Line Item Number / Title:
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
30: Other Support
6818AA0050 / Air Traffic Control

ID Code (A=Service Ready, B=Not Service Ready):
Program Elements for Code B Items: N/A
Other Related Program Elements: 0604633A
Line Item MDAP/MAIS Code: N/A

<table>
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<tr>
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<th>Exhibits ID CD</th>
<th>MDAP/MAIS Code</th>
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<th>FY 2020 Base</th>
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<td>- / -</td>
<td>- / 32.738</td>
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</tbody>
</table>

*Title represents 1) the Number / Title for Items; 2) the Number / Title [DODIC] for Ammunition; and/or 3) the Number / Title (Modification Type) for Modifications.

Note: Totals in this Exhibit P-40 set may not be exact or sum exactly due to rounding.

Justification:
FY 2020 Base procurement dollars in the amount of $4.188 million procures DAAS Generation 5 upgraded systems, system site preparation and installation.

FY 2020 Base procurement dollars in the amount of $0.918 million procures long lead items for the Digital Airport Surveillance Radar, Wind Turbine Mitigation Program.

FY 2020 Base procurement dollars in the amount of $13.086 million procures Interim Voice Switch Replacement systems and site surveys for future systems; provides for Army Airfield Automation System software upgrades and Information Assurance and Vulnerability Assessment; procures National Airspace System Voice Recorder systems and site preparation and installation; and procures Doppler VHF Omni-Directional Range/Distance-Measuring Equipment systems and site surveys and installation.

FY 2020 Base procurement dollars in the amount of $12.564 million provides for the continuation of ongoing TAIS COE efforts, support of Joint Interoperability Testing, support of network integration event testing, incorporation of emerging FAA requirements, real time retrieval of Aviation Mission Planning System mission data to mitigate risk by improving airspace situational awareness, and providing an improved soldier interface that is common with other ATC systems.

FY 2020 Base procurement dollars in the amount of $1.982 million provides for ATNAVICS program management, logistics and technical support.

In accordance with section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses and providing military support to civil authorities.
# Exhibit P-5, Cost Analysis: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:** 2031A / 04 / 30

**P-1 Line Item Number / Title:** 6818AA0050 / Air Traffic Control

**Item Number / Title [DODIC]:** AA0050 / Air Traffic Control

## ID Code (A=Service Ready, B=Not Service Ready) :

### Procurement Quantity (Units in Each)

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>1,525.161</td>
<td>78.790</td>
<td>63.872</td>
<td>32.738</td>
<td>-</td>
<td>32.738</td>
</tr>
<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>1,525.161</td>
<td>78.790</td>
<td>63.872</td>
<td>32.738</td>
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<td>32.738</td>
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<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>1,525.161</td>
<td>78.790</td>
<td>63.872</td>
<td>32.738</td>
<td>-</td>
<td>32.738</td>
</tr>
</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

### Initial Spares ($ in Millions)

- - - - - -

### Gross/Weapon System Unit Cost ($ in Thousands)

- - - - - -

### Note: Subtotals or Totals in this Exhibit P-5 may not be exact or sum exactly due to rounding.

## Cost Elements

<table>
<thead>
<tr>
<th>Cost Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flyaway Cost</td>
</tr>
<tr>
<td>Recurring Cost</td>
</tr>
</tbody>
</table>

### Unit Cost ($K) Qty (Each) Total Cost ($M) |

<table>
<thead>
<tr>
<th>Item</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
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</thead>
<tbody>
<tr>
<td>Fixed Base Precision Approach Radar (FBPAR)</td>
<td>89.918</td>
<td>-</td>
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<tr>
<td>DoD Advanced Automation System (DAAS)</td>
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<td>0.767</td>
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<td>Digital Airport Surveillance Radar (DASR)</td>
<td>84.982</td>
<td>0.345</td>
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<td>22.364</td>
<td>6.098</td>
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<td>Navigational Control (AAAS, DVOR, NVS, NVR)</td>
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<td>Mobile Tower System (MOTS)</td>
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<td>5.046</td>
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<td>ATC Common Simulator (ACS)</td>
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<td>Precision Approach Radar (PAR) 2020</td>
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<td>FY 2020 Base</td>
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<td><strong>Cost Elements</strong></td>
<td>Unit Cost ($ K)</td>
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<td>Subtotal: Flyaway Cost</td>
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**Secondary Distribution**

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<tr>
<th>FY 2018</th>
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<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
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<tr>
<td>Army</td>
<td>Quantity</td>
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<td>Total Obligation Authority</td>
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<td>ANG</td>
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<td>Total Obligation Authority</td>
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<td>AR</td>
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<tr>
<td>Total Obligation Authority</td>
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<td>Total: Secondary Distribution</td>
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<tr>
<td>Total Obligation Authority</td>
<td>78.790</td>
<td>63.872</td>
<td>32.738</td>
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</tr>
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UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA 8132AZ3300 / Industrial Facilities

ID Code (A=Service Ready, B=Not Service Ready): 30: Other Support

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020 Base</th>
<th>FY 2020 OCO</th>
<th>FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024</th>
<th>To Complete</th>
<th>Total</th>
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<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
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<td></td>
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<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>187.326</td>
<td>1.397</td>
<td>1.417</td>
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<td></td>
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<td>190.140</td>
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<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>187.326</td>
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<td>1.417</td>
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<td>190.140</td>
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<td>Plus CY Advance Procurement ($ in Millions)</td>
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<td></td>
<td></td>
<td>190.140</td>
</tr>
</tbody>
</table>

(The following Resource Summary rows are for informational purposes only. The corresponding budget requests are documented elsewhere.)

Initial Spares ($ in Millions)                                         |N/A          |         |         |             |             |               |         |         |         |         |             |           |
| Flyaway Unit Cost ($ in Thousands)                                    |             |         |         |             |             |               |         |         |         |         |             |           |
| Gross/Weapon System Unit Cost ($ in Thousands)                        |N/A          |         |         |             |             |               |         |         |         |         |             |           |

Description:

This program provides funding to the Army Test and Evaluation Command (ATEC) to establish, modernize, expand or replace test facilities used in production testing of Aircraft and Aircraft components. It sustains Army production test capabilities through upgrade and replacement of instrumentation and equipment that is technologically and/or economically obsolete. Modernization of test instrumentation and equipment provides increased automation and efficiencies, improved data quality and quantity and cost avoidance to Army Program Managers. Programmed funding will be used to upgrade or replace production test instrumentation and equipment at the Redstone Test Center (RTC), Huntsville, AL and Yuma Test Center (YTC), Yuma Proving Ground, AZ.

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<tbody>
<tr>
<td>Army</td>
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<tr>
<td>Total: Secondary Distribution</td>
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</tbody>
</table>

Justification:

FY 2019 Base procurement dollars in the amount of $1.417 million support the following: At Redstone Test Center (RTC), procures new data acquisition equipment used to collect vital airspeed data. The new airspeed calibration and measurement system uses advanced laser partial Doppler shift technology to make non-intrusive air data measurements with improved accuracy and repeatability to support testing on any rotary or fixed wing aircraft. At Yuma Test Center (YTC), replace and upgrade production-based support aircraft instrumentation hardware for the time-stamping of on-board recording and telemetry. Replacements and upgrades for production-based support aircraft instrumentation and equipment will support YTC mission by providing reliable telemetry data along with relevant environmental data and timestamps. The majority of the instrumentation being upgraded or replaced is obsolete and has met or exceeded its economic life. This instrumentation is required to ensure complete and accurate test data are collected and safety and environmental hazards are minimized. Benefits of this project include increased test efficiencies and decreased costs and risks to Army Program Managers.

In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.
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Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Date: March 2019

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA

P-1 Line Item Number / Title: 8132AZ3300 / Industrial Facilities

30: Other Support

ID Code (A=Service Ready, B=Not Service Ready):

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A
UNCLASSIFIED

Exhibit P-40, Budget Line Item Justification: PB 2020 Army

Appropriation / Budget Activity / Budget Sub Activity: 2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA

P-1 Line Item Number / Title: 9154A50100 / Launcher, 2.75 Rocket

P-1 Line Item Number / Title:

ID Code (A=Service Ready, B=Not Service Ready): N/A

Program Elements for Code B Items: N/A

Other Related Program Elements: N/A

Line Item MDAP/MAIS Code: N/A

Resource Summary

<table>
<thead>
<tr>
<th>Resource Summary</th>
<th>Prior Years FY 2018</th>
<th>FY 2019 FY 2020 Base</th>
<th>FY 2020 OCO FY 2020 Total</th>
<th>FY 2021</th>
<th>FY 2022</th>
<th>FY 2023</th>
<th>FY 2024 To Complete</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement Quantity (Units in Each)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gross/Weapon System Cost ($ in Millions)</td>
<td>94.320</td>
<td>1.911</td>
<td>1.901</td>
<td>2.201</td>
<td>-</td>
<td>2.201</td>
<td>2.348</td>
<td>2.492</td>
</tr>
<tr>
<td>Less PY Advance Procurement ($ in Millions)</td>
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<tr>
<td>Net Procurement (P-1) ($ in Millions)</td>
<td>94.320</td>
<td>1.911</td>
<td>1.901</td>
<td>2.201</td>
<td>-</td>
<td>2.201</td>
<td>2.348</td>
<td>2.492</td>
</tr>
<tr>
<td>Plus CY Advance Procurement ($ in Millions)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Total Obligation Authority ($ in Millions)</td>
<td>94.320</td>
<td>1.911</td>
<td>1.901</td>
<td>2.201</td>
<td>-</td>
<td>2.201</td>
<td>2.348</td>
<td>2.492</td>
</tr>
</tbody>
</table>

(Description: The Launchers and Test Sets Product Office is the executive procurement agent for all services and Foreign Military customers for all variants of 2.75 Inch Hydra-70 Rocket Launchers. The M261 19-tube analog launcher and the M260 7-tube analog launcher are used to fire 2.75 Inch Hydra-70 Guided / Unguided Rockets from the following platforms: AH-64 Apache, H-60 Blackhawk, and Special Operation aircraft. The analog launchers are non-repairable, yet durable enough to withstand at least 16 rocket firings per tube before being discarded. The empty weight of the M260 analog launcher is approximately 35 pounds and the empty weight of the M261 analog launcher is approximately 82 pounds. The analog launcher permits fuze-timing selections from the cockpit and will launch guided / unguided rockets using either the MK40 or the MK66 motors. 2.75 Inch Rocket Launcher procurement funding supports the launcher system to include resolution of obsolescence, safety, reliability, weapon integration activities, test sets, engineering changes, and production issues.

Justification: FY2020 base procurement dollars in the amount of $2.201 million supports the procurement of 141 M261 19-tube analog launchers for the AH-64 Apache, H-60 Blackhawk, and Special Operation aircraft. Procurement replaces disposable launchers as a result of annual rocket firings for pre-deployment training, and replenishes the limited issuable stockage depleted below levels acceptable to support training of Active Army, Special Operations Forces and Reserve Components usage.

The demand for the M260 analog launchers has decreased due to the Aviation Restructure Initiative.)
Exhibit P-40, Budget Line Item Justification: PB 2020 Army

**Appropriation / Budget Activity / Budget Sub Activity:**
2031A: Aircraft Procurement, Army / BA 04: Support Equipment and Facilities / BSA
30: Other Support

**P-1 Line Item Number / Title:**
9154A50100 / Launcher, 2.75 Rocket

**ID Code (A=Service Ready, B=Not Service Ready):**

**Program Elements for Code B Items:** N/A

**Other Related Program Elements:** N/A

**Line Item MDAP/MAIS Code:** N/A

"In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities."
The Launchers and Test Sets Product Office is the executive procurement agent for all services and Foreign Military customers, for all variants of M299 Launchers. This budget line procures all M299 launchers in support of Army operational, training, and war reserve requirements. The M299 launchers are qualified to carry and fire the AGM-114 Family of Missiles and the Joint Air-Ground Missile. Each launcher contains: Launcher electronics assembly (LEA) that communicates with the aircraft via bus commands, provides missile launch sequencing, seeker type ID, missile "Hang fire/Misfire" determination, alternate laser code algorithm processing, and Alternating Current (AC) to Direct Current (DC) power conversion for supplying missile DC power; Wiring harnesses that provide electrical connection from LEA to missile rails (not interchangeable with M272 harnesses); Holdback latch that retains missiles on rails and Safe/Arm switch that mechanically interrupts the arm power going to the LEA. The weight of the M299 launcher (4-Rail Launcher) is approximately 114 pounds and the length of the M299 is approximately 66.3 inches. M299 Longbow HELLFIRE Launcher procurement funding supports the launcher system to include resolution of obsolescence, safety, reliability, weapon integration activities, test sets, engineering changes, and production issues.

Justification:
FY 2020 base procurement dollars in the amount of $0.991 million supports the procurement of 9 M299 launchers for the AH-64 Apache aircraft.

FY 2020 OCO procurement dollars in the amount of $2.000 million supports the procurement of 18 M299 launchers for the MQ-1C Gray Eagle aircraft in order to replace and replenish launchers expended in wartime operations.

Note: P-1 OCO quantity is in error. P-40 OCO quantity justification is correct.
In accordance with Section 1815 of the FY 2008 National Defense Authorization Act (P.L. 110-181), this item is necessary for use by the active and reserve components of the Armed Forces for homeland defense missions, domestic emergency responses, and providing military support to civil authorities.