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| Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force | | | | | | | | | | Date: February 2018 | | |
|---|-------------|---------|---------|--------------|--|---------------|---------|---------|---------|---------------------|------------------|------------|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | | | | R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS | | | | | | | |
| COST (\$ in Millions) | Prior Years | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | FY 2020 | FY 2021 | FY 2022 | FY 2023 | Cost To Complete | Total Cost |
| Total Program Element | 174.437 | 241.495 | 209.847 | 137.095 | 0.000 | 137.095 | 67.322 | 1.275 | 2.360 | 22.572 | 0.000 | 856.403 |
| 657108: EPAWSS DEVELOPMENT | 174.437 | 241.495 | 209.847 | 137.095 | 0.000 | 137.095 | 67.322 | 1.275 | 2.360 | 22.572 | 0.000 | 856.403 |
| Quantity of RDT&E Articles | - | - | 1 | 3 | - | 3 | - | - | - | - | | |

Program MDAP/MAIS Code: 485

Note

Quantity of RDT&E Articles represents the 4 F-15C model test aircraft kits required to support flight test activities. The 4 kits required for the F-15E model test aircraft are accounted for in the procurement totals as the test kits will be upgraded to production kits when flight test activities are completed.

In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS, Budget Activity 07, Operational Systems Development was transferred to PE 0207171F, F-15 EPAWSS, Project 657108, EPAWSS Development, Budget Activity 05, System Development and Demonstration to align the program in the correct budget activity.

In FY 2015, PE 0207134F, F-15E Squadrons, Project 670131, Initial Operational Test and Evaluation, F-15 EPAWSS development efforts were transferred to PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS in order to provide budget transparency.

Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F. Prior Year funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038.

A. Mission Description and Budget Item Justification

The F-15 is the most versatile fighter in the world today. The F-15C continues to provide air superiority with an undefeated and unmatched aerial combat record. The F-15E retains this air superiority capability and adds systems, such as advanced imaging and targeting systems, to meet the requirement for all-weather, deep penetration, and night / under-the-weather, air-to-surface attack. A mainstay in operations both domestic and abroad, upgrades to the F-15 (avionics, armament, airframe and engines) are critical to maintaining combat viability (lethality, survivability and supportability). Projected to remain in service past 2040, avionics modernization is key to long-term weapon system viability. This modernization is built on a foundation of technical and acquisition support studies (both internal to the Air Force and through outside contractors). The proliferation of fourth generation enemy aircraft, sophisticated "double-digit" anti-aircraft missile systems and other enemy systems pose a significant threat to F-15 survivability. The F-15 Eagle Passive Active Warning and Survivability System (EPAWSS) will replace the F-15's functionally obsolete self-defense Tactical Electronic Warfare System (TEWS) to enhance weapon system situational awareness and survivability against enemy threats. F-15 EPAWSS will also improve reliability and sustainability. F-15 EPAWSS is linked to an aircraft operational flight program update schedule that works to integrate new capabilities with the airframe. Incorporation of corresponding spiral and / or phased technology / equipment improvements that include support equipment, mission planning systems, and training device upgrades will improve performance, supportability and aircrew training.

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | R-1 Program Element (Number/Name) PE 0207171F I F-15 EPAWSS | | | | | | |
| The F-15 EPAWSS upgrade will significantly improve the F-15's capability to autonomously and automatically detect, identify and locate radio frequency (RF) threats as well as provide the ability to deny, degrade, deceive, disrupt and defeat RF and electro-optical / infrared (EO / IR) threat systems in contested and unplanned operations within highly contested environments through 2040. The F-15 EPAWSS will provide indication, type and position of ground-based RF threats as well as the indication, type and bearing of airborne threats with the situational awareness needed to avoid, engage or negate the threat. The F-15 EPAWSS will prevent RF and IR threat systems from detecting or acquiring accurate targeting information prior to threat engagement to complicate and / or negate an enemy threat targeting solution--and effectively counter enemy missiles / weapons if adversary threat systems engage and employ weapons against friendly forces--through components such as chaff, flares, decoys / angle countermeasures and jamming. | | | | | | | | |
| Increment 1 replaces the obsolete TEWS. Increment 2 adds a towed decoy/angled countermeasure capability. Increment 2 development begins in FY 2021. | | | | | | | | |
| This program element may include necessary civilian pay expenses required to manage, execute, and deliver F-15 EPAWSS capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F." | | | | | | | | |
| This program is in Budget Activity 5, System Development and Demonstration, passed Milestone B approval, and has begun engineering and manufacturing development activities. This program element provides funding for the development of the F-15 EPAWSS to address current and future threats. | | | | | | | | |
| B. Program Change Summary (\$ in Millions) | | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | | |
| Previous President's Budget | | 256.669 | 209.847 | 138.127 | 0.000 | 138.127 | | |
| Current President's Budget | | 241.495 | 209.847 | 137.095 | 0.000 | 137.095 | | |
| Total Adjustments | | -15.174 | 0.000 | -1.032 | 0.000 | -1.032 | | |
| • Congressional General Reductions | | 0.000 | 0.000 | | | | | |
| • Congressional Directed Reductions | | 0.000 | 0.000 | | | | | |
| • Congressional Rescissions | | -6.000 | 0.000 | | | | | |
| • Congressional Adds | | 0.000 | 0.000 | | | | | |
| • Congressional Directed Transfers | | 0.000 | 0.000 | | | | | |
| • Reprogrammings | | 0.000 | 0.000 | | | | | |
| • SBIR/STTR Transfer | | -9.174 | 0.000 | | | | | |
| • Other Adjustments | | 0.000 | 0.000 | -1.032 | 0.000 | -1.032 | | |
| Change Summary Explanation | | | | | | | | |
| FY 2017: Congressional Rescission of \$6M - early to need funding; \$9.174 SBIRs withhold | | | | | | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total |
| Title: Eagle Passive/Active Warning Survivability System (EPAWSS) | | | | 241.495 | 209.847 | 137.095 | 0.000 | 137.095 |

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| Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Air Force | | | | | | | | | Date: February 2018 | | |
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | | | | | R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS | | | | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | | | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | |
| <p>Description: Planned replacement of the existing F-15 self-protection, Tactical Electronic Warfare System (TEWS). This includes technical and acquisition- related studies.</p> <p>FY 2018 Plans: Continue acquisition planning for Milestone C. Execute Increment 1 EMD. Produce EMD test assets and continue integration testing. Execute risk reduction, development test activities, and continue acquisition and technical-related studies for Increments 1. Funds may be used to resolve emerging safety of flight issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.</p> <p>FY 2019 Base Plans: Continue acquisition planning for Milestone C. Execute Increment 1 EMD. Execute Increment 1 flight tests. Continue to execute risk reduction, development test activities, and continue acquisition and technical-related studies for Increment 1. Funds may be used to resolve emerging safety of flight issues, accommodate technology insertion and fulfill FAA or other mandates necessary to ensure continued aircrew safety and mission effectiveness.</p> <p>FY 2019 OCO Plans: N/A</p> <p>FY 2018 to FY 2019 Increase/Decrease Statement: FY 2018 to 2019 decrease \$71.720M see above for details.</p> | | | | | | | | | | | |
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| | | | | | | | | | | | |
| Accomplishments/Planned Programs Subtotals | | | | | | 241.495 | 209.847 | 137.095 | 0.000 | 137.095 | |
| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2017 | FY 2018 | FY 2019 Base | FY 2019 OCO | FY 2019 Total | FY 2020 | FY 2021 | FY 2022 | FY 2023 | Cost To Complete | Total Cost |
| • APAF 05 Line Item | - | - | 147.685 | - | 147.685 | 149.047 | 142.443 | 308.818 | 258.982 | 1,122.507 | 2,129.482 |
| F15EWS: Aircraft Modification | | | | | | | | | | | |
| • APAF 07 Line Item 000999: | - | - | 4.034 | - | 4.034 | 4.184 | 8.046 | 10.214 | 10.400 | 35.321 | 72.199 |
| Aircraft Spares and Repair Parts | | | | | | | | | | | |
| Remarks | | | | | | | | | | | |
| FY 2019 - FY 2023 funding is for F-15 E Increment 1 Procurement. | | | | | | | | | | | |

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS | |
| E. Acquisition Strategy The MDA approved acquisition approach is to design a solution that leverages mature non-developmental components that integrate into the existing footprint on the F-15 aircraft left behind by the legacy F-15 electronic warfare system. To further improve schedule, affordability and program risk outcomes, and consistent with the JROC approved CDD, the F-15 EPAWSS program will pursue a two-increment acquisition approach. Increment 1 replaces the existing Radar Warning Receiver, Internal Countermeasures System and Countermeasures Dispenser System. Increment 2 adds a towed decoy / angle countermeasure capability. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force **Date:** February 2018

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| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS | Project (Number/Name) 657108 / EPAWSS DEVELOPMENT |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2017 | | FY 2018 | | FY 2019 Base | | FY 2019 OCO | | FY 2019 Total | | | |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| F-15 EPAWSS TMRR | SS/ Various | Boeing : St. Louis, MO | 111.702 | 32.927 | Oct 2016 | - | | - | | - | | - | 0.000 | 144.629 | 175.860 |
| F-15 EPAWSS EMD | SS/ Various | Boeing : St. Louis, MO | 56.790 | 152.203 | Nov 2016 | 138.630 | Oct 2017 | 91.567 | Oct 2018 | - | | 91.567 | 39.596 | 478.786 | 478.786 |
| F-15 EPAWSS | Various | Various : Various | 4.207 | 42.409 | Dec 2017 | 30.218 | Dec 2017 | 20.653 | | - | | 20.653 | 18.367 | 115.854 | 115.854 |
| Subtotal | | | 172.699 | 227.539 | | 168.848 | | 112.220 | | - | | 112.220 | 57.963 | 739.269 | N/A |

Remarks

FY16PB- EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction.

The individual program reference to "various" contract methods addresses other government costs for trainers, hardware, special studies, etc., that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.

| Test and Evaluation (\$ in Millions) | | | | FY 2017 | | FY 2018 | | FY 2019 Base | | FY 2019 OCO | | FY 2019 Total | | | |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Government Flight Test | Various | Various : Various | 1.738 | 8.153 | Jan 2017 | 21.531 | Jan 2018 | 21.655 | Jan 2019 | - | | 21.655 | 19.658 | 72.735 | 72.735 |
| Subtotal | | | 1.738 | 8.153 | | 21.531 | | 21.655 | | - | | 21.655 | 19.658 | 72.735 | N/A |

Remarks

The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc. that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.

| Management Services (\$ in Millions) | | | | FY 2017 | | FY 2018 | | FY 2019 Base | | FY 2019 OCO | | FY 2019 Total | | | |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Program Management Support Costs | Various | Various : Various | - | 5.803 | Dec 2016 | 19.468 | Oct 2017 | 3.220 | | - | | 3.220 | 15.908 | 44.399 | 44.399 |
| Subtotal | | | - | 5.803 | | 19.468 | | 3.220 | | - | | 3.220 | 15.908 | 44.399 | N/A |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Air Force | | | | | | | | | | | | Date: February 2018 | | | |
| Appropriation/Budget Activity 3600 / 5 | | | | | | R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS | | | | Project (Number/Name) 657108 / EPAWSS DEVELOPMENT | | | | | |
| Management Services (\$ in Millions) | | | | FY 2017 | | FY 2018 | | FY 2019 Base | | FY 2019 OCO | | FY 2019 Total | | | |
| Cost Category Item | Contract Method & Type | Performing Activity & Location | Prior Years | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Award Date | Cost | Cost To Complete | Total Cost | Target Value of Contract |
| Remarks The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc. that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort. | | | | | | | | | | | | | | | |
| | | | Prior Years | FY 2017 | | FY 2018 | | FY 2019 Base | | FY 2019 OCO | | FY 2019 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | | | 174.437 | 241.495 | | 209.847 | | 137.095 | | - | | 137.095 | 93.529 | 856.403 | N/A |
| Remarks Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F. Prior Year funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038. | | | | | | | | | | | | | | | |

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| Exhibit R-4, RDT&E Schedule Profile: PB 2019 Air Force | Date: February 2018 |
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| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i> | Project (Number/Name) 657108 / <i>EPAWSS DEVELOPMENT</i> |
|--|--|--|

| | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | | FY 2023 | | | |
|----------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| <i>F-15 EPAWSS</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EPAWSS EMD Contract Award | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EPAWSS MS C | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EPAWSS Increment 1 testing | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: PB 2019 Air Force | | | Date: February 2018 |
| Appropriation/Budget Activity 3600 / 5 | R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i> | Project (Number/Name) 657108 / <i>EPAWSS DEVELOPMENT</i> | |

Schedule Details

| Events by Sub Project | Start | | End | |
|----------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| <i>F-15 EPAWSS</i> | | | | |
| EPAWSS EMD Contract Award | 1 | 2017 | 1 | 2017 |
| EPAWSS MS C | 4 | 2019 | 4 | 2019 |
| EPAWSS Increment 1 testing | 1 | 2019 | 3 | 2021 |