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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2016 Air Force **Date:** February 2015

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / <i>Airborne Warning and Control System (AWACS)</i> |
|--|--|

| COST (\$ in Millions)  | Prior Years | FY 2014 | FY 2015 | FY 2016 Base | FY 2016 OCO | FY 2016 Total | FY 2017 | FY 2018 | FY 2019 | FY 2020 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element  | 3,706.552   | 143.404 | 180.804 | 161.812      | -           | 161.812       | 108.766 | 82.371  | 100.371 | 110.466 | Continuing       | Continuing |
| 67411L: <i>Airborne Warning &amp; Control System (AWACS)</i> | 3,706.552   | 143.404 | 180.804 | 161.812      | -           | 161.812       | 108.766 | 82.371  | 100.371 | 110.466 | Continuing       | Continuing |
| Quantity of RDT&E Articles                                   | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Program MDAP/MAIS Code:** 277

**A. Mission Description and Budget Item Justification**

Mission: E-3 Airborne Warning and Control System (AWACS) is the premier airborne platform providing battle management (BM)/command and control (C2) for Commander In Chief and combatant commander tasking in joint, allied, and coalition operations, humanitarian relief, and homeland defense. AWACS provides a real-time picture of friendly, neutral, and hostile air activity. Its capabilities include all-altitude/all-weather surveillance of the battle space; early warning of enemy actions; a real-time ability to find, fix, track, and assess airborne or maritime threats; and detection, location, and identification of electronic emitters.

1. Block 40/45 is replacing AWACS 1970's vintage mission systems that are experiencing Diminishing Manufacturing Sources (DMS) issues, are difficult and expensive to upgrade, and limit overall AWACS system performance. The Block 40/45 upgrade will improve integration, quality and timeliness of sensor data to the shooter, improve Combat Identification (CID), improve AWACS contribution to Time Critical Targeting via Data Link Infrastructure (DLI), improve electronic support measures processing and enable more effective, faster upgrades via an open-system, Ethernet-based architecture. This upgrade also updates the ground support infrastructure, training systems [(Mission Crew Training Set (MCTS), and Mission Computing Maintenance Trainer (MCMT)], data links and the Avionics Integration Support Facility (AISF) all located at Tinker Air Force Base

2. Next Generation Identification Friend or Foe (NGIFF) provides AWACS with enhanced IFF interrogator operation to add a more secure Mode 5 capability. The National Security Agency (NSA) declared IFF Mode 4 unsecure and obsolete on 5 Nov 2003. Joint Requirements Oversight Council Memo 047-07 requires IFF Mode 5 interrogation capability by FY14. NGIFF is on track to declare IOC in Dec 2015. The new Mode 5 interrogation capability extends the effective range of the AWACS interrogator, while helping discriminate against closely spaced cooperative targets. NGIFF developed and integrated a basic Mode 5 capability on Block 30/35 starting in FY09 and began developing a full Mode 5 capability on Block 40/45 in FY11. Hardware will be common between the Block 30/35 and Block 40/45 platforms. NGIFF will also integrate Mode S, a civilian air traffic control capability residing in the NGIFF hardware, as funding allows.

3. DMS Replacement of Avionics for Global Operations and Navigation (DRAGON) completes the FAA/International Civil Aviation Organization (ICAO)/EUROCONTROL (European Organization for the Safety of Air Navigation) air traffic control mandated safety of flight capabilities. This program will provide the E-3 fleet with the flight instruments and other avionics for the Required Navigation Performance (RNP), and the surveillance and communication capabilities necessary to maintain continued critical unrestricted access to global airspace. Non-compliance will result in airspace restrictions and denials that will impact AWACS ability to support worldwide responses to situations requiring immediate on-scene Command and Control (C2) Battle Management (BM). DRAGON replaces the existing Diminishing Manufacturing Sources (DMS) Global Positioning System (GPS) Integrated Navigation System (GINS) with a modern Flight Management System (FMS) that will accommodate new

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| <p>capabilities including Mode 5 IFF and Joint Mission Planning System (JMPS). Also included as part of the modification is the addition of data link communications, voice and data link digital radios, improved visual displays, and competitive acquisition of DRAGON flight simulators. Emphasis on employment of Commercial-Off-The-Shelf (COTS) avionics is expected to lower cost, reduce the tech refresh cycle, and enhance life cycle management. The Engineering and Manufacturing Development (EMD) phase of DRAGON is being executed as a Cooperative Program between the US and NATO.</p> <p>4. Electronic Protection (EP): EP will provide improved radar processing in a specific flight environment to meet a classified requirement. Processing will initially address radar modes comprising 90% of operational AWACS radar usage. EP will install an adjunct processor that works in parallel with the current Radar System Improvement Program (RSIP) system. The EP-processed radar picture will appear on the battle manager's display in place of the current RSIP output when the EP radar modes are selected.</p> <p>5. Training, Support, and Infrastructure (TSI) program provides continuing management support for AWACS modernization and enhancement. These activities include managing the AWACS Development Test and Evaluation (DT&amp;E) infrastructure and tracking and monitoring AWACS training, support equipment and program Government Furnished Property. The overall Development Test and Evaluation (DT&amp;E) test infrastructure supports development, production, and sustainment projects and maintains facilities to support AWACS aircraft during system and sub-system testing at Boeing Field, WA. Funding is shared between Research, Development, Test, and Evaluation (RDT&amp;E) and production funds. The TSI assets also support multiple international Airborne Early Warning and Control (AEW&amp;C) projects on a maintenance fee basis, not limited to projects for France, Saudi Arabia, United Kingdom, Japan, and North Atlantic Treaty (NATO) AEW&amp;C efforts.. Key programs include contractual management of the AWACS Avionics Integration Laboratory (AIL) integrated with the Block 40/45 configured Advanced Development Lab (ADL) and the AWACS Radar Systems Integration Lab/Software Development Facility (SIL/SDF). These labs provide US, Foreign Military Sales (FMS), and international customers with a configured development and qualification system and subsystem environment supporting all AWACS system and radar development, production, and sustainment. TSI efforts allow new support equipment technologies and test strategies to be analyzed to ensure concurrent capability to sustain existing, modified, and upgraded E-3 equipment. TSI supports trainer/simulator upgrade analysis and requirements definition to ensure trainers and simulators are kept current with the AWACS baseline.</p> <p>6. Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR): C2ISR system improvements investigate and develop future capabilities of the AWACS weapon system. These efforts also include but are not limited to the investigation, analysis and development to ensure that AWACS successfully integrates with joint and coalition forces in a net-centric environment. C2ISR primarily supports pre-systems acquisition in the areas of materiel solution analysis and technology development. This is accomplished by prototyping and demonstrating capabilities required by the warfighter but also includes developing an E-3 Modernization &amp; Sustainment Roadmap that projects user capability needs, as well as materiel solutions for the user needs.</p> <p>7. Internet Protocol Enabled Communication (IPEC): IPEC will provide the Block 40/45 E-3 with a medium-bandwidth IP communications capability to connect to the Global Information Grid and will support net-centric operations/warfare. IPEC will provide a reliable IP-enabled communication capability to support a shortened digitized kill-chain of time-sensitive targets. The modification will provide a permanent INMARSAT-based IP-enabled communications package supporting warfighter identified requirements for increased bandwidth SIPRNET and multi-domain networks.</p> |  |                            |

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8. MIDS (Multifunctional Information Distribution System) Radio System will provide a Link 16 capability with high-jam-resistance, high-speed, crypto-secure computer-to-computer connectivity in support of every type of military platform from Air Force fighters to Navy submarines. Current 20 year old Class 2 terminal has sustainability/Diminishing Manufacturing Sources (DMS) issues and does not support mandated Crypto Mod (CM) & Freq Remap (FR). MIDS resolves DMS issues, provides CM & FR, Link 16 enhancements & growth for Next Gen Tactical Data Link (TDL).

9. AWACS current Combat Identification (CID) capability is based upon 1960's era technology that has become unsustainable, and requires an update to retain a significant part of AWACS overall mission capability. AWACS will address C2 CID shortfalls with a modern, persistent Airborne Moving Target Indication (AMTI) Battle Management Command and Control (BMC2) combat ID. CID supports the kill chain and decision superiority. The upgrade will also provide for better integration into Block 40/45 and NGIFF equipped AWACS aircraft.

This program is in Budget Activity 7, Operational Systems Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

The FY2016 funding request was reduced by \$2.284 million to account for the availability of prior execution balances.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016 Base</b> | <b>FY 2016 OCO</b> | <b>FY 2016 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 148.369        | 180.804        | 124.987             | -                  | 124.987              |
| Current President's Budget                        | 143.404        | 180.804        | 161.812             | -                  | 161.812              |
| Total Adjustments                                 | -4.965         | -              | 36.825              | -                  | 36.825               |
| • Congressional General Reductions                | -              | -              |                     |                    |                      |
| • Congressional Directed Reductions               | -              | -              |                     |                    |                      |
| • Congressional Rescissions                       | -              | -              |                     |                    |                      |
| • Congressional Adds                              | -              | -              |                     |                    |                      |
| • Congressional Directed Transfers                | -              | -              |                     |                    |                      |
| • Reprogrammings                                  | -              | -              |                     |                    |                      |
| • SBIR/STTR Transfer                              | -4.965         | -              |                     |                    |                      |
| • Other Adjustments                               | -              | -              | 36.825              | -                  | 36.825               |

**Change Summary Explanation**

FY16 PB adds \$36.825M to support delay on DRAGON driven by Budget Control Act funding reductions in the FY14.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016 Base</b> | <b>FY 2016 OCO</b> | <b>FY 2016 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> E-3 Block 40/45                               | 11.268         | -              | -                   | -                  | -                    |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2016 Air Force   |                |  |                     | <b>Date:</b> February 2015 |                      |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |                |  |                     |                            |                      |
|  | <b>FY 2014</b> | <b>FY 2015</b>   | <b>FY 2016 Base</b> | <b>FY 2016 OCO</b>         | <b>FY 2016 Total</b> |
| n/a  |                |  |                     |                            |                      |
| <b>Title:</b> E-3 DMS Replacement of Avionics for Global Operations and Navigation (DRAGON)  | 89.482         | 129.150  | 88.277              | -                          | 88.277               |
| <b>Description:</b> DMS Replacement of Avionics for Global Operations and Navigation (DRAGON)  |                |  |                     |                            |                      |
| <b>FY 2014 Accomplishments:</b>  |                |  |                     |                            |                      |
| - Modified first EMD aircraft (N-1) to support modification efforts.   |                |  |                     |                            |                      |
| - Completed lab software testing. Initiated N-1 ground testing.  |                |  |                     |                            |                      |
| <b>FY 2015 Plans:</b>  |                |  |                     |                            |                      |
| - Perform Handover Test of US development test aircraft (D-1), transfer aircraft to Boeing and begin the aircraft modification.                      |                |  |                     |                            |                      |
| - Start and complete the flight testing of the NATO developmental aircraft (N- 1).   |                |  |                     |                            |                      |
| - Perform the Technical Order (TO) validation for N-1.   |                |  |                     |                            |                      |
| - Start the Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) for N-1.   |                |  |                     |                            |                      |
| - Initiate development of Automatic Dependent Surveillance - Broadcast (ADS-B) Out capability to DRAGON in FY15.                                     |                |  |                     |                            |                      |
| <b>FY 2016 Base Plans:</b>   |                |  |                     |                            |                      |
| - Will complete N-1 (common) Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA).  |                |  |                     |                            |                      |
| - Will perform D-1 Installation & Checkout.  |                |  |                     |                            |                      |
| - Will perform D-1 Ground Test and Flight Test.  |                |  |                     |                            |                      |
| - Will conduct D-1 Tech Order validation.  |                |  |                     |                            |                      |
| - Will perform D-1 Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) for D-1.  |                |  |                     |                            |                      |
| - Will begin Classroom and A/C Training.   |                |  |                     |                            |                      |
| <b>FY 2016 OCO Plans:</b>  |                |  |                     |                            |                      |
| N/A  |                |  |                     |                            |                      |
| <b>Title:</b> E-3 Electronic Protection (EP)   | 9.882          | 18.604   | 26.092              | -                          | 26.092               |
| <b>Description:</b> Electronic Protection (EP)   |                |  |                     |                            |                      |
| <b>FY 2014 Accomplishments:</b>  |                |  |                     |                            |                      |
| - Awarded risk reduction contract.   |                |  |                     |                            |                      |
| - Addressed requirements needed to safely install upgrade into E-3 fleet.  |                |  |                     |                            |                      |

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|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2014 | FY 2015 | FY 2016 Base | FY 2016 OCO | FY 2016 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>- Reduced technical risk in development of classified technology solutions to mitigate issues/concerns identified under the risk management plan study.</p> <p><b>FY 2015 Plans:</b></p> <ul style="list-style-type: none"> <li>- Award EMD contract.</li> <li>- Begin development of classified technology solutions to mitigate issues/concerns identified under the Radar Modernization Program (RMP) study.</li> </ul> <p><b>FY 2016 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue development of classified technology solutions to mitigate issues/concerns identified in the Radar Modernization Program (RMP) study.</li> <li>- Will conduct Critical Design Review (CDR) in FY16.</li> </ul> <p><b>FY 2016 OCO Plans:</b><br/>N/A</p>  |         |         |              |             |               |
| <p><b>Title:</b> E-3 Training, Support, and Infrastructure (TSI)</p> <p><b>Description:</b> Training, Support, and Infrastructure (TSI)</p> <p><b>FY 2014 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Supported AWACS developmental and production programs lab integration efforts.</li> <li>- Provided system lab support to Electronic Protection (EP), Block 40/45, Diminishing Manufacturing Sources Replacement of Avionics (DRAGON), Next Generation Identification Friend or Foe (NGIFF), Transformational Networking Capability (TNC), Situational Awareness Data Link (SADL), Internet Protocol Enabled Communication (IPEC), Japan and Royal Saudi Air Force (RSAF) radar improvement, integration and test.</li> <li>- Supported Airborne Early Warning and Control (AEW&amp;C) System and other Office of the Secretary of Defense (OSD) mandated interoperability testing and support mandatory E-3 Operational, Safety, and Suitability and Effectiveness program.</li> <li>- Supported the E-3 AWACS Developmental Test and Evaluation Avionics Integration Laboratory (AIL).</li> </ul> <p><b>FY 2015 Plans:</b></p> <ul style="list-style-type: none"> <li>- Support AWACS developmental and production programs lab integration efforts. Provide system lab support to EP, Block 40/45, DRAGON, NGIFF, TNC, SADL, IPEC, Japan and RSAF radar improvement, integration and test.</li> </ul> | 8.371   | 11.472  | 11.139       | -           | 11.139        |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  |  |  |                            |  |                |                |                         |                        |                          |
|   |  |  |  |                            |  |                |                |                         |                        |                          |
| <ul style="list-style-type: none"> <li>- Support AEW&amp;C and other OSD mandated interoperability testing and support mandatory E-3 Operational, Safety, and Suitability and Effectiveness program.</li> <li>- Support the E-3 AWACS Developmental Test and Evaluation AIL.</li> </ul> <p><b>FY 2016 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Will support AWACS developmental and production programs lab integration efforts.</li> <li>- Will provide system lab support to EP, Block 40/45, DRAGON, NGIFF, TNC, SADL, IPEC, Japan and RSAF radar improvement, integration and test.</li> <li>- Will support AEW&amp;C and other OSD mandated interoperability testing and support mandatory E-3 Operational, Safety, and Suitability and Effectiveness program.</li> <li>- Will support evaluation and assessment of future modernization programs.</li> <li>- Will support the E-3 AWACS Developmental Test and Evaluation AIL.</li> </ul> <p><b>FY 2016 OCO Plans:</b><br/>N/A</p>  |  |  |  |                            |  | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016<br/>Base</b> | <b>FY 2016<br/>OCO</b> | <b>FY 2016<br/>Total</b> |
| <p><b>Title:</b> E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR)</p> <p><b>Description:</b> Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR)</p> <p><b>FY 2014 Accomplishments:</b></p> <ul style="list-style-type: none"> <li>- Conducted engineering / integration studies to determine required modifications and associated costs to upgrade and support Risk Reduction activities for program planning including but not limited to Cooperative Engagement Capability (CEC), Electronic Protection (EP), and Internet Protocol Enabled Communication (IPEC).</li> <li>- Executed International Cooperative Research &amp; Development (ICR&amp;D).</li> </ul> <p><b>FY 2015 Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct engineering / integration studies to determine required modifications and associated costs to upgrade and support Risk Reduction activities for program planning including but not limited to Cooperative Engagement Capability (CEC), Electronic Protection (EP), and Internet Protocol Enabled Communication (IPEC), Combat ID (CID) Diminishing Manufacturing Sources (DMS), and Communication Network Upgrade (CNU).</li> <li>- Continue execution of International Cooperative Research &amp; Development (IR&amp;D).</li> </ul> <p><b>FY 2016 Base Plans:</b></p> |  |  |  |                            |  | 2.847          | 3.503          | 3.608                   | -                      | 3.608                    |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  |  |                |                            |                        |                          |
|   |  | <b>FY 2014</b>   | <b>FY 2015</b> | <b>FY 2016<br/>Base</b>    | <b>FY 2016<br/>OCO</b> | <b>FY 2016<br/>Total</b> |
| <p>- Will conduct engineering / integration studies to determine required modifications and associated costs to upgrade and support Risk Reduction activities for program planning.</p> <p>- Will continue to execute International Cooperative Research &amp; Development (IR&amp;D).</p> <p><b>FY 2016 OCO Plans:</b><br/>N/A</p>   |  |  |                |                            |                        |                          |
| <p><b>Title:</b> E-3 Internet Protocol Enabled Communication (IPEC)</p> <p><b>Description:</b> Internet Protocol Enabled Communication (IPEC)</p> <p><b>FY 2014 Accomplishments:</b><br/>Risk Reduction Studies/activities conducted under C2ISR</p> <p><b>FY 2015 Plans:</b><br/>Award Engineering Manufacturing and Development (EMD) contract to develop a medium bandwidth Internet Protocol capability capitalizing on the INMARSAT terminal development conducted under Diminishing Manufacturing Sources (DMS) Replacement of Avionics for Global Operations and Navigation (DRAGON).</p> <p><b>FY 2016 Base Plans:</b><br/>Will continue EMD activities in preparation for contractor Development Test (DT) and Government DT and Operational Test (OT).</p> <p><b>FY 2016 OCO Plans:</b><br/>N/A</p> |  | -  | 16.575         | 13.974                     | -                      | 13.974                   |
| <p><b>Title:</b> E-3 Combat Identification (CID) Diminishing Manufacturing Sources (DMS)</p> <p><b>Description:</b> Combat Identification (CID) Diminishing Manufacturing Sources (DMS)</p> <p><b>FY 2014 Accomplishments:</b><br/>N/A</p> <p><b>FY 2015 Plans:</b><br/>N/A</p> <p><b>FY 2016 Base Plans:</b></p>   |  | -  | -              | 9.435                      | -                      | 9.435                    |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2014</b> | <b>FY 2015</b> | <b>FY 2016<br/>Base</b> | <b>FY 2016<br/>OCO</b> | <b>FY 2016<br/>Total</b> |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|
| - Will award an Engineering and Manufacturing Development (EMD) contract to start a multi-year development effort addressing C2 Combat Identification (CID) shortfalls with a modern, persistent Airborne Moving Target Indication (AMTI) Battle Management Command and Control (BMC2) CID capability.<br>- AWACS current CID capability is based upon 1960's era technology that has become unsustainable, and requires an upgrade to retain a significant portion of AWACS overall mission capability.<br><br><b>FY 2016 OCO Plans:</b><br>N/A   |                |                |                         |                        |                          |
| <b>Title:</b> E-3 Communication Network Upgrade (CNU)<br><b>Description:</b> Communication Network Upgrade (CNU)<br><br><b>FY 2014 Accomplishments:</b><br>N/A<br><br><b>FY 2015 Plans:</b><br>N/A<br><br><b>FY 2016 Base Plans:</b><br>- Will award Engineering and Manufacturing Development (EMD) contract to start multi-year development.<br>- CNU will use Link 16 for high-jam-resistance, high-speed, crypto-secure computer-to-computer connectivity in support of every type of military platform from Air Force fighters to Navy submarines.<br>- Current 20 year old Class 2 terminal has sustainability / Dimishing Manufacturing Sources (DMS) issues; does not support mandated Crypto Mod (CM) & Freq Remap (FR).<br>- CNU resolves DMS issues, provides CM & FR, Link 16 enhancements & growth for Next Gen Tactical Data Link (TDL).<br><br><b>FY 2016 OCO Plans:</b><br>N/A | -              | -              | 9.287                   | -                      | 9.287                    |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 143.404        | 180.804        | 161.812                 | -                      | 161.812                  |

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**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>   | <u>FY 2014</u> | <u>FY 2015</u> | <u>FY 2016</u><br><u>Base</u> | <u>FY 2016</u><br><u>OCO</u> | <u>FY 2016</u><br><u>Total</u> | <u>FY 2017</u> | <u>FY 2018</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA05: Line Item # E00300: <i>E-3</i>                         | 138.513        | 16.491         | 13.178                        | -                            | 13.178                         | 77.941         | 115.830        | 126.545        | 154.883        | Continuing                        | Continuing        |
| • APAF: BA05: Line Item # E34045: <i>E-3 (Blk 40/45)</i>             | -              | 191.284        | 183.308                       | -                            | 183.308                        | 226.429        | 103.643        | 58.221         | 29.533         | -                                 | -                 |
| • APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i> | 11.681         | 2.957          | 16.234                        | -                            | 16.234                         | 23.806         | 22.682         | 24.132         | 24.552         | Continuing                        | Continuing        |

**Remarks**

**E. Acquisition Strategy**

Most major programs (E-3 Block 40/45, E-3 DRAGON, and lab support) will be sole source to the Boeing Corporation, Seattle, WA.

EP and IPEC will award new contracts in 3QFY15 and 4QFY15, respectively.

AMASS replacement contract will be a sole source IDIQ contract to provide continuing modernization and sustainment support for the AWACS fleet. Expected award date is 4QFY16.

Boeing work location will be based on program contract or as modified and mutually agreed to by the Government and The Boeing Corporation based on Boeing's ongoing relocation of E-3 activities from Seattle, WA to Oklahoma City, OK.

**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 2016 Air Force** **Date:** February 2015

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 7 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / Airborne Warning and Control System (AWACS) | <b>Project (Number/Name)</b><br>67411L / Airborne Warning & Control System (AWACS) |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>   |                        |                                |             | FY 2014 |            | FY 2015 |            | FY 2016 Base |            | FY 2016 OCO |            | FY 2016 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| (U) E-3 Block 40/45   | SS/CPPIF               | Boeing : Seattle, WA           | 1,106.006   | 10.889  | Jan 2014   | -       |            | -            |            | -           |            | -             | -                | 1,116.895  | TBD                      |
| (U) E-3 Next Generation Identification Friend or Foe (NGIFF)                        | SS/CPPIF               | Boeing : Seattle, WA           | 89.553      | 20.480  | Jan 2014   | 1.459   | Oct 2014   | -            |            | -           |            | -             | Continuing       | Continuing | TBD                      |
| (U) E-3 DMS Replacement of Avionics for Global Operations and Navigation (DRAGON)   | SS/FPIF                | Boeing : Seattle, WA           | 97.722      | 82.834  | Jan 2014   | 122.082 | Jan 2015   | 81.881       | Jan 2016   | -           |            | 81.881        | Continuing       | Continuing | TBD                      |
| (U) E-3 Command and Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) | SS/<br>Various         | Boeing : Seattle, WA           | 139.559     | 0.457   | Jan 2014   | -       |            | 3.231        | Jan 2016   | -           |            | 3.231         | Continuing       | Continuing | TBD                      |
| (U) E-3 Electronic Protection (EP)  | SS/TBD                 | Boeing : Seattle, WA           | 0.000       | 8.117   | Feb 2014   | 16.687  | Jul 2015   | 22.792       | Jan 2016   | -           |            | 22.792        | Continuing       | Continuing | TBD                      |
| (U) E-3 Internet Protocol Enabled Communication (IPEC)                              | SS/<br>Various         | Boeing : Seattle, WA           | 0.000       | -       |            | 14.301  | Jul 2015   | 10.874       | Jan 2016   | -           |            | 10.874        | Continuing       | Continuing | TBD                      |
| (U) E-3 Combat Identification (CID) Diminishing Manufacturing Sources (DMS)         | TBD                    | TBD : TBD,                     | 0.000       | -       |            | -       |            | 9.435        | Apr 2016   | -           |            | 9.435         | Continuing       | Continuing | TBD                      |
| (U) E-3 Communication Network Upgrade (CNU)   | TBD                    | TBD : TBD,                     | 0.000       | -       |            | -       |            | 9.287        | Mar 2016   | -           |            | 9.287         | Continuing       | Continuing | TBD                      |
| (U) Prior Platform Modifications  | Various                | Various : Various, NA          | 1,534.419   | -       |            | -       |            | -            |            | -           |            | -             | -                | 1,534.419  | -                        |
| <b>Subtotal</b>   |                        |                                | 2,967.259   | 122.777 |            | 154.529 |            | 137.500      |            | -           |            | 137.500       | -                | -          | -                        |

**Remarks**  
Total Program does not include NATO funds.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force                                 |                        |  |             |   |            |         |            |  |            |             |            | Date: February 2015 |                  |            |                          |
|---|------------------------|--|-------------|---|------------|---------|------------|--|------------|-------------|------------|---------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity   |                        |  |             | R-1 Program Element (Number/Name)                         |            |         |            | Project (Number/Name)                              |            |             |            |                     |                  |            |                          |
| 3600 / 7  |                        |  |             | PE 0207417F / Airborne Warning and Control System (AWACS) |            |         |            | 67411L / Airborne Warning & Control System (AWACS) |            |             |            |                     |                  |            |                          |
| Support (\$ in Millions)  |                        |  |             | FY 2014   |            | FY 2015 |            | FY 2016 Base                                       |            | FY 2016 OCO |            | FY 2016 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 |
| (U) Support/ITSP, MITRE, travel, other  | Various                | AWACS Program Office : Hanscom AFB, MA | 85.095      | -   |            | -       |            | -  |            | -           |            | -                   | -                | 85.095     | -                        |
| <b>Subtotal</b>   |                        |  | 85.095      | -   |            | -       |            | -  |            | -           |            | -                   | -                | 85.095     | -                        |
| Test and Evaluation (\$ in Millions)  |                        |  |             | FY 2014   |            | FY 2015 |            | FY 2016 Base                                       |            | FY 2016 OCO |            | FY 2016 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 |
| (U) E-3 AWACS Development Integration Test Support (ADITS) Contract / Other test activities | SS/<br>Various         | Boeing : Seattle, WA                   | 239.985     | -   |            | -       |            | -  |            | -           |            | -                   | -                | 239.985    | TBD                      |
| (U) E-3 Training, Support & Infrastructure (TSI)  | SS/<br>Various         | Boeing : Seattle, WA                   | 40.090      | 7.649   | Jan 2014   | 11.098  | Jan 2015   | 11.139   | Jan 2016   | -           |            | 11.139              | Continuing       | Continuing | TBD                      |
| (U) Joint Test Facility   | Various                | Multiple :                             | 0.730       | 0.933   | Oct 2013   | 1.249   | Oct 2014   | -  |            | -           |            | -                   | Continuing       | Continuing | TBD                      |
| <b>Subtotal</b>   |                        |  | 280.805     | 8.582   |            | 12.347  |            | 11.139   |            | -           |            | 11.139              | -                | -          | -                        |
| Management Services (\$ in Millions)  |                        |  |             | FY 2014   |            | FY 2015 |            | FY 2016 Base                                       |            | FY 2016 OCO |            | FY 2016 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 |
| (U) Program Management Administration (PMA)   | Various                | AWACS Program Office : Hanscom AFB, MA | 373.393     | 12.045  | Oct 2013   | 13.928  | Oct 2014   | 13.173   | Oct 2015   | -           |            | 13.173              | Continuing       | Continuing | TBD                      |
| <b>Subtotal</b>   |                        |  | 373.393     | 12.045  |            | 13.928  |            | 13.173   |            | -           |            | 13.173              | -                | -          | -                        |
| <b>Project Cost Totals</b>  |                        |  | 3,706.552   | 143.404   |            | 180.804 |            | 161.812  |            | -           |            | 161.812             | -                | -          | -                        |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2016 Air Force</b> |   | <b>Date:</b> February 2015   |
| <b>Appropriation/Budget Activity</b><br>3600 / 7                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / Airborne Warning and Control System (AWACS) | <b>Project (Number/Name)</b><br>67411L / Airborne Warning & Control System (AWACS) |

|  | FY 2014              |   |   |   | FY 2015              |   |   |   | FY 2016              |   |   |   | FY 2017              |   |   |   | FY 2018              |   |   |   | FY 2019              |   |   |   | FY 2020 |   |   |   |
|--|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|---------|---|---|---|
|  | 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 |
| 40/45 MCT EMD  | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| 40/45 IOC  | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| NGIFF EMD (UPX-40 software and firmware development for Block 40/45) | ████████████████████ |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| NGIFF 40/45 DT   | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| NGIFF 40/45 OT   | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| NGIFF IOC  |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| DRAGON EMD   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| DRAGON DT/OT   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| DRAGON Milestone C   |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| EP Technology Development  | ████████████████████ |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| EP Milestone B   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| EP EMD   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| EP Milestone C   |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| EP DT/OT   |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| IPEC TD  |                      |   |   |   | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| IPEC EMD   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| IPEC Ktr DT & Gov't DT/OT  |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| IPEC Milestone C   |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| CID DMS TD   |                      |   |   |   |                      |   |   |   | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| CID DMS Milestone B  |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| CID DMS EMD  |                      |   |   |   |                      |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   | ████████████████████ |   |   |   |         |   |   |   |
| CID DMS Milestone C  |                      |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |         |   |   |   |
| CNU TD Phase   |                      |   |   |   |                      |   |   |   | ██████████           |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |
| CNU Milestone B  |                      |   |   |   |                      |   |   |   | ████                 |   |   |   |                      |   |   |   |                      |   |   |   |                      |   |   |   |         |   |   |   |

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**Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force** **Date:** February 2015

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 7 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / Airborne Warning and Control System (AWACS) | <b>Project (Number/Name)</b><br>67411L / Airborne Warning & Control System (AWACS) |
|--|---|--|

|                 | FY 2014 |   |   |   | FY 2015 |   |   |   | FY 2016 |   |   |   | FY 2017 |   |   |   | FY 2018 |   |   |   | FY 2019 |   |   |   | FY 2020 |   |   |   |
|-----------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|                 | 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 |
| CNU EMD         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| CNU Milestone C |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2016 Air Force |   | <b>Date:</b> February 2015   |
| <b>Appropriation/Budget Activity</b><br>3600 / 7                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / Airborne Warning and Control System (AWACS) | <b>Project (Number/Name)</b><br>67411L / Airborne Warning & Control System (AWACS) |

Schedule Details

| Events   | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| 40/45 MCT EMD  | 1       | 2014 | 4       | 2014 |
| 40/45 IOC  | 2       | 2014 | 2       | 2014 |
| NGIFF EMD (UPX-40 software and firmware development for Block 40/45) | 1       | 2014 | 2       | 2015 |
| NGIFF 40/45 DT   | 2       | 2014 | 1       | 2015 |
| NGIFF 40/45 OT   | 2       | 2014 | 1       | 2015 |
| NGIFF IOC  | 1       | 2016 | 1       | 2016 |
| DRAGON EMD   | 1       | 2014 | 2       | 2017 |
| DRAGON DT/OT   | 1       | 2015 | 2       | 2017 |
| DRAGON Milestone C   | 2       | 2017 | 2       | 2017 |
| EP Technology Development  | 1       | 2014 | 2       | 2015 |
| EP Milestone B   | 3       | 2015 | 3       | 2015 |
| EP EMD   | 3       | 2015 | 3       | 2017 |
| EP Milestone C   | 4       | 2017 | 4       | 2017 |
| EP DT/OT   | 2       | 2017 | 4       | 2017 |
| IPEC TD  | 1       | 2015 | 3       | 2015 |
| IPEC EMD   | 4       | 2015 | 3       | 2017 |
| IPEC Ktr DT & Gov't DT/OT  | 1       | 2017 | 3       | 2017 |
| IPEC Milestone C   | 3       | 2017 | 3       | 2017 |
| CID DMS TD   | 1       | 2016 | 2       | 2016 |
| CID DMS Milestone B  | 3       | 2016 | 3       | 2016 |
| CID DMS EMD  | 3       | 2016 | 4       | 2018 |
| CID DMS Milestone C  | 4       | 2018 | 4       | 2018 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2016 Air Force **Date:** February 2015

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 7 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207417F / Airborne Warning and Control System (AWACS) | <b>Project (Number/Name)</b><br>67411L / Airborne Warning & Control System (AWACS) |
|--|---|--|

| Events          | Start   |      | End     |      |
|-----------------|---------|------|---------|------|
|                 | Quarter | Year | Quarter | Year |
| CNU TD Phase    | 1       | 2016 | 2       | 2016 |
| CNU Milestone B | 2       | 2016 | 2       | 2016 |
| CNU EMD         | 2       | 2016 | 4       | 2019 |
| CNU Milestone C | 4       | 2019 | 4       | 2019 |