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|  |   |                   |                     |  |                     |                     |                              |                          |                     |            |
|--|---|-------------------|---------------------|--|---------------------|---------------------|------------------------------|--------------------------|---------------------|------------|
| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>   |   |                   |                     |  |                     |                     | DATE<br><b>February 2000</b> |                          |                     |            |
| BUDGET ACTIVITY<br><b>07 - Operational System Development</b>  |   |                   |                     | PE NUMBER AND TITLE<br><b>0207417F Airborne Warning and Control System (AWACS)</b> |                     |                     |                              | PROJECT<br><b>67411L</b> |                     |            |
| COST (\$ in Thousands)   |   | FY 1999<br>Actual | FY 2000<br>Estimate | FY 2001<br>Estimate  | FY 2002<br>Estimate | FY 2003<br>Estimate | FY 2004<br>Estimate          | FY 2005<br>Estimate      | Cost to<br>Complete | Total Cost |
| 67411L   | Airborne Warning & Control System (AWACS) | 31,669            | 36,178              | 35,653   | 31,969              | 99,370              | 95,799                       | 132,942                  | Continuing          | TBD        |
| Quantity of RDT&E Articles   |   | 0                 | 0                   | 0  | 0                   | 0                   | 0                            | 0                        | 0                   | 0          |
| <p>(U) <b><u>A. Mission Description</u></b></p> <p>Develops and integrates system improvements to enable the E-3 AWACS to remain an effective, survivable airborne surveillance system for command and control of tactical forces and for strategic defense of the U.S.</p> <p>The Block 30/35 upgrade includes Electronic Support Measures, Central Computer Memory Upgrade, Joint Tactical Information Distribution System (JTIDS) Class 2H/TADIL J and NAVSTAR Global Positioning System Integrated Navigation System. The Block 30/35 upgrade is a production program.</p> <p>The Radar System Improvement Program (RSIP) will increase radar reliability and maintainability, improve E-3 surveillance capability against evolving threats posed by low radar cross section fighters and cruise missiles, improve electronic counter- countermeasures, and enhance man-machine interface for the Airborne Radar Technicians. RSIP is a production program.</p> <p>Block 40/45 Risk Reduction performs research and analysis of selected high-risk areas to the next major AWACS Mission System Computers and Displays upgrade. This essential modernization will improve the sensor-to-shooter capability, improve Combat ID, and open the existing architecture to enable cheaper and faster upgrades. To ensure the warfighter requirements are met, these risk reduction studies include concept exploration to obtain Track Quality 7, modeling/simulation of the Block 40/45 architecture, designing a COTS technology insertion process, and reducing the total ownership cost. Other research efforts focus on design alternatives for data fusion with Multi-Source Integration and Data Link Infrastructure timing constraints.</p> <p>The Command &amp; Control, Intelligence, Surveillance, and Reconnaissance (C2ISR) System Architecture Improvements (formerly Offensive Counter Air Upgrades/Systems Architecture Improvements) are concept exploration and program definition/risk reduction efforts that implement a spiral development process allowing continuous improvements and implementation of the C2ISR roadmap for the Airborne Early Warning &amp; Control mission area. These efforts include AWACS augmentation with UAV surveillance sensors, AWACS weapon system integration with Integrated Command and Control System, development of and migration to Real-Time Defense Information Infrastructure Common Operating Environment, development and execution of Joint Expeditionary Force Experiment (JEFX) initiatives to be demonstrated on AWACS during JEFX live-fly experiments, rapid prototyping of 'plug and play' applications that provide significant situational awareness improvements to the Air Battle Manager in Offensive and Defensive Counter Air missions.</p> <p>Periodic Depot Maintenance/Airframe (PDMA) are modifications to the E-3 mission equipment and aircraft systems designed to keep the aircraft operational.</p> <p>The E-2/E-3 commonality effort focuses primarily on advanced receiver and processing technologies. This effort provides a forum to review all activities in the E-2 and E-3 AWACS programs and identify additional opportunities for technology and development exploitation.</p> |   |                   |                     |  |                     |                     |                              |                          |                     |            |
| Project 67411L   |   |                   | Page 1 of 6 Pages   |  |                     |                     | Exhibit R-2 (PE 0207417F)    |                          |                     |            |

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| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>  |  | DATE<br><b>February 2000</b> |
| BUDGET ACTIVITY<br><b>07 - Operational System Development</b>   | PE NUMBER AND TITLE<br><b>0207417F Airborne Warning and Control System (AWACS)</b> | PROJECT<br><b>67411L</b>     |
| <p>(U) <b><u>A. Mission Description Continued</u></b><br/>         Test System 3 (TS-3)/AWACS Development and Production Test (ADAPT) support includes maintenance and operations of the government-owned/contractor-operated test aircraft and associated laboratory facilities located at Boeing in Seattle, Washington.<br/>         Cooperative Engagement Capability (CEC) funding in FY00 provides the initial design to integrate the Navy-developed CEC hardware with the AWACS mission system to support a Single Integrated Air Picture (SIAP) flight demonstration. This activity reduces the risk of a full development program to integrate and demonstrate the AWACS contribution to a tactical sensor network with CEC on AWACS.</p> <p>(U) <u>FY 1999 (\$ in Thousands)</u><br/>         (U) \$6,451 C2ISR System Architecture Improvements<br/>         (U) \$6,946 E-2/E-3 Commonality<br/>         (U) \$3,958 JTIDS DLI<br/>         (U) \$14,314 ADAPT support and program sustaining efforts<br/>         (U) \$31,669 Total</p> <p>(U) <u>FY 2000 (\$ in Thousands)</u><br/>         (U) \$6,900 C2ISR System Architecture Improvements<br/>         (U) \$7,796 Test System-3/ADAPT support and program sustaining efforts<br/>         (U) \$15,800 Cooperative Engagement Capability (CEC) on TS-3<br/>         (U) \$5,682 Block 40/45 Risk Reduction (result of Congressional transfer from AWACS procurement)<br/>         (U) \$36,178 Total</p> <p>(U) <u>FY 2001 (\$ in Thousands)</u><br/>         (U) \$13,614 C2ISR System Architecture Improvements<br/>         (U) \$15,176 Test System-3/ADAPT support and program sustaining efforts<br/>         (U) \$6,863 Block 40/45 Risk Reduction<br/>         (U) \$35,653 Total</p> <p>(U) <b><u>B. Budget Activity Justification</u></b><br/>         Operational Systems Development, Budget Activity 7. AWACS is a fielded, operational system currently undergoing major modifications/block upgrades and continuing sustainment activities.</p> |  |                              |
| Project 67411L  | Page 2 of 6 Pages  | Exhibit R-2 (PE 0207417F)    |

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| RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)   |   |                |   |                 |                 |                   | DATE<br>February 2000     |                 |                 |                   |
|---|---|----------------|---|-----------------|-----------------|-------------------|---------------------------|-----------------|-----------------|-------------------|
| BUDGET ACTIVITY   |   |                | PE NUMBER AND TITLE   |                 |                 |                   | PROJECT                   |                 |                 |                   |
| <b>07 - Operational System Development</b>  |   |                | <b>0207417F Airborne Warning and Control System<br/>(AWACS)</b> |                 |                 |                   | <b>67411L</b>             |                 |                 |                   |
| <b>(U) C. Program Change Summary (\$ in Thousands)</b>  |   |                |   |                 |                 |                   |                           |                 |                 |                   |
|   |   |                | <u>FY 1999</u>  | <u>FY 2000</u>  | <u>FY 2001</u>  | <u>Total Cost</u> |                           |                 |                 |                   |
| (U)   | Previous President's Budget (FY 2000 PBR)     |                | 33,173  | 33,393          | 49,170          | TBD               |                           |                 |                 |                   |
| (U)   | Appropriated Value                            |                | 34,189  | 36,393          |                 |                   |                           |                 |                 |                   |
| (U)   | Adjustments to Appropriated Value             |                |   |                 |                 |                   |                           |                 |                 |                   |
|   | a. Congressional/General Reductions           |                | -1,016  | -16             |                 |                   |                           |                 |                 |                   |
|   | b. Small Business Innovative Research         |                | -1,286  |                 |                 |                   |                           |                 |                 |                   |
|   | c. Omnibus or Other Above Threshold Reprogram |                |   |                 | -199            |                   |                           |                 |                 |                   |
|   | d. Below Threshold Reprogram                  |                | -41   |                 |                 |                   |                           |                 |                 |                   |
|   | e. Rescissions                                |                | -177  |                 |                 |                   |                           |                 |                 |                   |
|   | f. Other                                      |                |   |                 |                 | TBD               |                           |                 |                 |                   |
| (U)   | Adjustments to Budget Years Since FY 2000 PBR |                |   |                 | -13,517         |                   |                           |                 |                 |                   |
| (U)   | Current Budget Submit/FY 2001 PBR             |                | 31,669  | 36,178          | 35,653          | TBD               |                           |                 |                 |                   |
| (U)   | <u>Significant Program Changes:</u>           |                |   |                 |                 |                   |                           |                 |                 |                   |
| <b>(U) D. Other Program Funding Summary (\$ in Thousands)</b>   |   |                |   |                 |                 |                   |                           |                 |                 |                   |
|   |   | <u>FY 1999</u> | <u>FY 2000</u>  | <u>FY 2001</u>  | <u>FY 2002</u>  | <u>FY 2003</u>    | <u>FY 2004</u>            | <u>FY 2005</u>  | <u>Cost to</u>  | <u>Total Cost</u> |
|   |   | <u>Actual</u>  | <u>Estimate</u>   | <u>Estimate</u> | <u>Estimate</u> | <u>Estimate</u>   | <u>Estimate</u>           | <u>Estimate</u> | <u>Complete</u> |                   |
| (U)   | AF RDT&E                                      |                |   |                 |                 |                   |                           |                 |                 |                   |
| (U)   | Other APPN                                    |                |   |                 |                 |                   |                           |                 |                 |                   |
| (U)   | Aircraft Procurement, AF, E-3<br>Mods         | 112,774        | 104,254   | 88,654          | 70,361          | 59,181            | 94,849                    | 105,826         |                 | TBD               |
| (U)   | E-3 Initial Spares, AF                        | 3,084          | 40,499  | 8,227           | 11,052          | 15,523            | 7,207                     | 8,845           |                 | TBD               |
| <b>(U) E. Acquisition Strategy</b>  |   |                |   |                 |                 |                   |                           |                 |                 |                   |
| Block 30/35: The Electronic Support Measures (ESM) component of Block 30/35 is joint development program with NATO. The production contract utilizes a Fixed Price Incentive Fee (FPIF) plan with options to Boeing for ESM and other Block 30/35 Group A hardware. The contract with Lockheed for the CC-2E memory upgrade is a fixed price contact with follow-on options. JTIDS and Global Positioning System hardware is acquired via their respective program office-awarded contracts. The Radar System Improvement Program (RSIP) is a cooperative development program with NATO and the United Kingdom. Boeing is the prime integrating contractor; Northrop-Grumman is the subcontractor for radar component items. The RSIP production contract is Firm Fixed Price (FFP) with priced options through FY99 and is a |   |                |   |                 |                 |                   |                           |                 |                 |                   |
| Project 67411L  |   |                | Page 3 of 6 Pages   |                 |                 |                   | Exhibit R-2 (PE 0207417F) |                 |                 |                   |

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| <b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b> |  | DATE<br><b>February 2000</b> |
| BUDGET ACTIVITY<br><b>07 - Operational System Development</b>  | PE NUMBER AND TITLE<br><b>0207417F Airborne Warning and Control System (AWACS)</b> | PROJECT<br><b>67411L</b>     |

**(U) E. Acquisition Strategy Continued**

sole source to Boeing follow-on FY00 RSIP production contract. The PDMA acquisition strategy utilizes an approved contract structure that includes multiple contracts with multiple organizations with overlapping and continuous performance periods. The Program Office has the flexibility to quickly add specific PDMA tasks as funding is made available.

**(U) F. Schedule Profile**

|                                  | <u>FY 1999</u> |   |   |   | <u>FY 2000</u> |   |   |   | <u>FY 2001</u> |   |   |   |
|----------------------------------|----------------|---|---|---|----------------|---|---|---|----------------|---|---|---|
|                                  | 1              | 2 | 3 | 4 | 1              | 2 | 3 | 4 | 1              | 2 | 3 | 4 |
| (U) RSIP Trial Install Start     |                |   |   |   |                |   |   |   |                |   |   |   |
| (U) RSIP Trial Install Complete  |                |   |   |   |                |   |   |   |                |   |   |   |
| (U) RSIP IOC 3QTR FY00           |                |   |   |   |                |   |   | X |                |   |   |   |
| (U) RSIP FOT&E Complete          |                |   | * |   |                |   |   |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#1)       |                |   |   |   |                |   |   |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#2)       |                |   | * |   |                |   |   |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#3)       |                |   |   |   |                | X |   |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#4)       |                |   |   |   |                |   | X |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#5)       |                |   |   |   |                |   | X |   |                |   |   |   |
| (U) RSIP KIT DELIVERY (#6)       |                |   |   |   |                |   |   | X |                |   |   |   |
| (U) RSIP KIT DELIVERY (#7)       |                |   |   |   |                |   |   |   |                | X |   |   |
| (U) RSIP KIT DELIVERIES (#8-9)   |                |   |   |   |                |   |   |   |                | X |   |   |
| (U) RSIP KIT DELIVERIES (#10-12) |                |   |   |   |                |   |   |   |                |   |   | X |
| (U) RSIP KIT DELIVERY (#13)      |                |   |   |   |                |   |   |   |                |   |   | X |
| (U) BLK 30/35 RAA/IOC            |                |   | * |   |                |   |   |   |                |   |   |   |
| (U) LAST BLK 30/35 MOD INDUCTION |                |   |   |   |                |   |   |   |                | X |   |   |
| (U) BLK 30/35 FOC 3QTR FY01      |                |   |   |   |                |   |   |   |                |   | X |   |

\* Denotes completed events  
X Denotes planned events

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)  |                                 |                            |   |                       |                               | DATE<br>February 2000 |                       |                       |                           |                      |
|---|---------------------------------|----------------------------|---|-----------------------|-------------------------------|-----------------------|-----------------------|-----------------------|---------------------------|----------------------|
| BUDGET ACTIVITY   |                                 |                            | PE NUMBER AND TITLE   |                       |                               | PROJECT               |                       |                       |                           |                      |
| <b>07 - Operational System Development</b>  |                                 |                            | <b>0207417F Airborne Warning and Control System<br/>(AWACS)</b> |                       |                               | <b>67411L</b>         |                       |                       |                           |                      |
| <b>(U) A. Project Cost Breakdown (\$ in Thousands)</b>  |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
|   |                                 |                            |   |                       |                               | <u>FY 1999</u>        |                       | <u>FY 2000</u>        |                           | <u>FY 2001</u>       |
| (U)   | Contracts                       |                            |   |                       |                               | 26,601                |                       | 32,686                |                           | 32,748               |
| (U)   | MITRE/TEMS                      |                            |   |                       |                               | 4,343                 |                       | 2,429                 |                           | 2,200                |
| (U)   | Travel                          |                            |   |                       |                               | 412                   |                       | 763                   |                           | 405                  |
| (U)   | Other                           |                            |   |                       |                               | 313                   |                       | 300                   |                           | 300                  |
| (U)   | Total                           |                            |   |                       |                               | 31,669                |                       | 36,178                |                           | 35,653               |
| <b>(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)</b>   |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| <b>(U) Performing Organizations:</b>  |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| <u>Contractor or Government</u>   | <u>Contract Method/Type</u>     | <u>Award or Obligation</u> | <u>Performing Activity</u>                                      | <u>Project Office</u> | <u>Total Prior to FY 1999</u> | <u>Budget FY 1999</u> | <u>Budget FY 2000</u> | <u>Budget FY 2001</u> | <u>Budget to Complete</u> | <u>Total Program</u> |
| <u>Performing Activity</u>  | <u>or Funding Vehicle</u>       | <u>Date</u>                | <u>EAC</u>  | <u>EAC</u>            |                               |                       |                       |                       |                           |                      |
| <u>Product Development Organizations</u>  |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| (U)   | Boeing (RSIP)**                 | C/FPIF                     | 9/89  | 415,900               | 400,417                       | 325,672               |                       |                       | 0                         | 325,672              |
| (U)   | Boeing (Block 40/45)            | FPIF/CPAF                  | N/A   | 0                     | 0                             | 0                     | 0                     | 5,682                 | 6,863                     | 110,297              |
| (U)   | Boeing (Blk 30/35)**            | SS/FPIF                    | 5/87  | N/A                   | N/A                           | 291,667               |                       |                       | 0                         | 291,667              |
| (U)   | Boeing (PDMA)                   | Multiple                   | N/A   | N/A                   | N/A                           | 58,149                | 0                     | 0                     | 0                         | 58,149               |
| (U)   | Boeing (C2ISR Sys Arch Imp)     | FPIF/CPAF                  | N/A   | N/A                   | N/A                           | 950                   | 6,451                 | 6,900                 | 13,614                    | 45,670               |
| (U)   | Raytheon ( E-2/E-3 Commonality) | Multiple                   | N/A   | N/A                   | N/A                           | 12,752                | 6,946                 |                       | 0                         | 19,698               |
| (U)   | Raytheon (CEC)                  | CPAF                       | 11/99   | 42,000                | 42,000                        | 0                     |                       | 15,800                | 0                         | 3,000                |
| * N/A based on PDMA Acquisition Strategy which includes multiple contracts with multiple organizations with overlapping and continuing performance periods. |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| ** Total Program does not include NATO funds.   |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| <u>Support and Management Organizations</u>   |                                 |                            |   |                       |                               |                       |                       |                       |                           |                      |
| (U)   | Support/TEMS                    | Multiple                   | N/A   | N/A                   | N/A                           | 557,271               | 5,068                 | 3,492                 | 2,905                     | Continuing           |
|   | MITRE, travel, other            | contracts                  |   |                       |                               |                       |                       |                       |                           | TBD                  |

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| RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3) |          |     |     |     |   |                |                |                |                  | DATE<br>February 2000 |  |
|--|----------|-----|-----|-----|---|----------------|----------------|----------------|------------------|-----------------------|--|
| BUDGET ACTIVITY                                    |          |     |     |     | PE NUMBER AND TITLE   |                |                |                |                  | PROJECT               |  |
| <b>07 - Operational System Development</b>         |          |     |     |     | <b>0207417F Airborne Warning and Control System<br/>(AWACS)</b> |                |                |                |                  | <b>67411L</b>         |  |
| <b>(U) Performing Organizations Continued:</b>     |          |     |     |     |   |                |                |                |                  |                       |  |
| <u>Test and Evaluation Organizations</u>           |          |     |     |     |   |                |                |                |                  |                       |  |
| (U) Test System-3 ADAPT                            | Multiple | N/A | N/A | N/A | 47,987  | 13,204         | 4,304          | 12,271         | Continuing       | TBD                   |  |
| Contract / Other test activities                   |          |     |     |     |   |                |                |                |                  |                       |  |
|  |          |     |     |     | <u>Total Prior</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Budget</u>  | <u>Budget to</u> | <u>Total</u>          |  |
| <u>Subtotals</u>                                   |          |     |     |     | <u>to FY 1999</u>   | <u>FY 1999</u> | <u>FY 2000</u> | <u>FY 2001</u> | <u>Complete</u>  | <u>Program</u>        |  |
| Subtotal Product Development                       |          |     |     |     | 689,190   | 13,397         | 28,382         | 20,477         | 158,967          | 910,413               |  |
| Subtotal Support and Management                    |          |     |     |     | 557,271   | 5,068          | 3,492          | 2,905          | TBD              | TBD                   |  |
| Subtotal Test and Evaluation                       |          |     |     |     | 47,987  | 13,204         | 4,304          | 12,271         | TBD              | TBD                   |  |
| Total Project                                      |          |     |     |     | 1,294,448   | 31,669         | 36,178         | 35,653         | TBD              | TBD                   |  |