

# ARMY RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)

June 2001

|   |                   |                     |  |                     |                     |                     |                     |                     |                       |            |
|---|-------------------|---------------------|--|---------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|------------|
| BUDGET ACTIVITY<br><b>5 - ENG MANUFACTURING DEV</b> |                   |                     | PE NUMBER AND TITLE<br><b>0604633A - Air Traffic Control</b> |                     |                     |                     |                     |                     | PROJECT<br><b>586</b> |            |
| COST (In Thousands)                                 | FY 2000<br>Actual | FY 2001<br>Estimate | FY 2002<br>Estimate  | FY 2003<br>Estimate | FY 2004<br>Estimate | FY 2005<br>Estimate | FY 2006<br>Estimate | FY 2007<br>Estimate | Cost to<br>Complete   | Total Cost |
| 586 AIR TRAFFIC CONTROL                             | 4786              | 2008                | 2197   | 0                   | 0                   | 0                   | 0                   | 0                   | 0                     | 0          |

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

**PLEASE NOTE: This administration has not addressed FY2003-2007 requirements. All FY 2003-2007 budget estimates included in this book are notional only and subject to change.**

This program element (PE) funds continuous efforts in the development of modernized tactical and fixed base Air Traffic Control (ATC) systems that will enhance and ensure total aviation safety in both the tactical and strategic ATC domains. Funded in this program element is the development of the Mobile Tower System (MOTS), a tactical mobile tower designed to replace an antiquated and obsolete legacy system. Lack of modern deployable mobile towers require excessive deployment assets due to the size/weight, and do not have radio systems capable of compatibility with the latest army and joint aircraft. A Non-Developmental Item (NDI), MOTS will be equipped with modernized and secure avionics to ensure highly reliable and consistent tactical aircraft communications at semipermanent landing areas. MOTS will provide modern digital, secure, anti-jam communications that are compatible with Army, joint, and allied aircraft. The current fielded obsolete systems (AN/TSW-7A; AN/TSQ-70A) are extremely large for rapid deployment, require excessive transportation assets and cannot be airlifted with an organic helicopter, and have obsolete communication assets that limit the ability to control modern aircraft, creating a severe safety of flight environment. Funds are also included for the Mobile Expeditionary Accurate Night Vision Compatible Portable Airfield Lighting System (MEANPALS/PALS) which will allow the PM to continue the acquisition strategy to procure and evaluate prototype systems. MEANPALS/PALS is a mobile aircraft lighting system that provides all the necessary elements to establish a remote heli-pad/landing zone and a 10,000 foot runway. Currently, ATC units are utilizing primitive lighting capabilities, being restricted to nothing more than standard chemical light sticks or manually deployed bean bag lights. MEANPALS/PALS will provide a compatible visual precision approach landing system which is totally independent of aircraft systems and a lighted, virtual landing environment for aircraft arriving during periods of darkness and/or reduced low visibility. MEANPALS/PALS provides a significant force protection enhancement to the safety of Army, joint, and allied aircraft system operations at tactical airfields, forward area rearming and refueling points, landing and pick-up zones and other unimproved landing areas. This system will significantly enhance the safety of flight operations for aircraft arriving during periods of darkness, and marginal weather.

This PE also funds evaluation of the feasibility of alternatives for the Air Traffic Navigation, Integration, and Coordination System (ATNAVICS) and Tactical Airspace Integration System (TAIS) connectivity and interoperability with the National Airspace System (NAS) systems. Additionally, the Tactical Terminal Control System (TTCS) hardtop kit will be a product improvement and test effort to enhance the system's utility to the user and maximize the reliability of the communication suite of equipment by providing protection from environmental exposure.

New efforts will include the evaluation of alternative concepts for Non-Directional Beacons (NDB) replacement programs and radar target generators/simulators. Effort will include initial design and development of Combat Mission Simulator (CMS) to support the TAIS and ATNAVICS Systems. After the evaluation of the concepts, the most promising concepts/solutions for the NDB replacement and radar simulators will be determined. These efforts will significantly enhance aviation flight safety to preserve limited aviation resources. These systems support the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

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## FY 2000 Accomplishments

- 20 Completed Market Analysis
- 75 Visual Instrument Display System (VIDS) Testing
- 200 Initiated the ATNAVICS/TPX-56 Certification
- 291 Developed System Engineering Documents and Competitive Requirements Analysis
- 1200 MOTS Procurement
- 15 Completed Market Analysis (MEANPALS/PALS)
- 1116 Initiated Procurement of NDI Prototypes (MEANPALS/PALS)
- 384 Developed Requirements & Conducted System Level Tradeoffs (MEANPALS/PALS)
- 355 Conducted System Risk Analysis and Evaluation (MEANPALS/PALS)
- 325 Initiated Demonstration and System Design Analysis (MEANPALS/PALS)
- 330 Conducted Design Verification and Iterative Trade Studies (MEANPALS/PALS)
- 475 Conducted Systems Engineering Compatibility Analysis (MEANPALS/PALS)

Total 4786

## FY 2001 Planned Program

- 1744 Complete EMD phase for MOTS
- 213 Conduct MOTS Developmental/Operational Test/Evaluation
- 51 Small Business Innovative Research (SBIR)/ Small Business Technology Transfer Program (STTR)

Total 2008

## FY 2002 Planned Program

- 200 TTCS Retrofit/Testing
- 700 NAS Interface with ATNAVICS
- 550 NAS Interface with TAIS
- 747 Concept Exploration for ATC Simulators (ATNAVICS/Fixed Base PAR/FPN-66 Radars)

Total 2197

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| <b><u>B. Program Change Summary</u></b>       | FY 2000 | FY 2001 | FY 2002 | FY 2003 |
|---|---------|---------|---------|---------|
| Previous President's Budget (FY2001 PB)       | 4911    | 2026    | 2189    | 0       |
| Appropriated Value                            | 4981    | 2026    | 0       | 0       |
| Adjustments to Appropriated Value             | 0       | 0       | 0       | 0       |
| a. Congressional General Reductions           | 0       | 0       | 0       | 0       |
| b. SBIR / STTR                                | -125    | 0       | 0       | 0       |
| c. Omnibus or Other Above Threshold Reduction | -19     | 0       | 0       | 0       |
| d. Below Threshold Reprogramming              | 0       | 0       | 0       | 0       |
| e. Rescissions                                | -51     | -18     | 0       | 0       |
| Adjustments to Budget Years Since FY2001 PB   | 0       | 0       | 8       | 0       |
| Current Budget Submit (FY 2002/2003 PB )      | 4786    | 2008    | 2197    | 0       |

| <b><u>C. Other Program Funding Summary</u></b> | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 | To Compl | Total Cost |
|--|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| APA AZ1710- Airfield Support Equipment         | 2645    | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0        | 0          |
| APA AA0050 - Air Traffic Control               | 18410   | 73464   | 68887   | 0       | 0       | 0       | 0       | 0       | 0        | 0          |

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**D. Acquisition Strategy:** Initiate a MOTS prototype for design, development, and testing. Initiate a MEANPALS system for demonstration/evaluation through a firm fixed price contract.

| <b>E. Schedule Profile</b>  | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|
| Completed Market Analysis for MOTS  | 1-2Q    |         |         | 0       | 0       | 0       | 0       | 0       |
| Visual Instrument Display System (VIDS) Testing                                     | 2Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Initiated the ATNAVICS/TPX-56 Certification   |         | 1Q      |         | 0       | 0       | 0       | 0       | 0       |
| Develop System Engineering Documents and Competitive Requirements Analysis for MOTS | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Completed Market Analysis for MEANPALS/PALS   | 1Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Initiated Procurement of NDI Prototypes   | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Developed Requirements & Conducted System Level Tradeoffs                           | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Conducted System Risk Analysis and Evaluation                                       | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Initiated Demonstration and System Design Analysis                                  | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Conducted Design Verification and Iterative Trade Studies                           | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Conducted Systems Engineering Compatibility Study                                   | 4Q      |         |         | 0       | 0       | 0       | 0       | 0       |
| Complete EMD phase for MOTS   |         | 3Q      |         | 0       | 0       | 0       | 0       | 0       |
| Conduct MOTS Developmental/Operational Test/Evaluation                              |         | 3-4Q    |         | 0       | 0       | 0       | 0       | 0       |
| NAS Interface with ATNAVICS System  |         |         | 2Q      | 0       | 0       | 0       | 0       | 0       |
| NAS Interface with TAIS System  |         |         | 2Q      | 0       | 0       | 0       | 0       | 0       |
| Concept Exploration for ATC Simulators (ATNAVICS/Fixed BASE PAR/FPN-66 Radars)      |         |         | 2Q      | 0       | 0       | 0       | 0       | 0       |
| TTCS Retrofit/Testing   |         |         | 2Q      | 0       | 0       | 0       | 0       | 0       |
| Complete EMD Phase of NAS Interface with ATNAVICS                                   |         |         |         | 0       | 0       | 0       | 0       | 0       |
| Complete EMD Phase of NAS Interface with TAIS                                       |         |         |         | 0       | 0       | 0       | 0       | 0       |
| Complete EMD Phase for Air Traffic Radar Simulators                                 |         |         |         | 0       | 0       | 0       | 0       | 0       |
| Testing for Air Traffic Radar Simulators  |         |         |         | 0       | 0       | 0       | 0       | 0       |
| Concept Exploration for Replacement of Non Directional Beacons                      |         |         |         | 0       | 0       | 0       | 0       | 0       |

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E. Schedule Profile (continued)

FY 2000 FY 2001 FY 2002 FY 2003 FY 2004 FY 2005 FY 2006 FY 2007

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| I. Product Development     | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a . ATNAVICS               | CPIF                   | Raytheon, Boston, MA           | 26100          | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| b . MOTS                   | TBD                    | TBD                            | 2043           | 1442         | 3Q                 | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| c . ATNAVICS GFE           | Reqn                   | Various                        | 8              | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| d . MEANPALS/PALS**        | FFP                    | TBD*                           | 2416           | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| e . NAS/ATNAVICS INTERFACE | TBD                    | TBD                            | 0              | 0            |                    | 570          | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| f . NAS/TAIS INTERFACE     | TBD                    | TBD                            | 0              | 0            |                    | 485          | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| g . ATC SIMULATORS         | TBD                    | TBD                            | 0              | 0            |                    | 517          | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| h . NDB BEACON             | TBD                    | TBD                            | 0              | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | Continue                 |
|                            |                        |                                |                |              |                    |              |                    |              |                    |                  |            |                          |
| Subtotal:                  |                        |                                | 30567          | 1442         |                    | 1572         |                    | 0            |                    | 0                | 0          | Continue                 |

Remarks: \* Initial contract terminated for cause. Effort being reprocured.

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| II. Support Cost  | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|-------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a. ATNAVICS       | MIPR                   | AMCOM, AL / CECOM, NJ          | 2688           | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| b. MOTS           | TBD                    | TBD                            | 311            | 210          | 3Q                 | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| c. MEANPALS/PALS  | Various                | Various                        | 1613           | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| d. TTCS RETROFIT  | TBD                    | TBD                            | 0              | 0            |                    | 125          | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| e. ATC SIMULATORS | TBD                    | TBD                            | 0              | 0            |                    | 100          | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| f. NDB BEACON     | TBD                    | TBD                            | 0              | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | Continue                 |
|                   |                        |                                |                |              |                    |              |                    |              |                    |                  |            |                          |
| Subtotal:         |                        |                                | 4612           | 210          |                    | 225          |                    | 0            |                    | 0                | 0          | Continue                 |

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| III. Test and Evaluation | Contract Method & Type | Performing Activity & Location       | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------|------------------------|--------------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a . ATNAVICS             | MIPR                   | TEXCOM, Ft Hood, TX / TECOM, APG, MD | 1538           | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| b . MOTS                 | MIPR                   | AATD, FT EUSTIS, VA                  | 0              | 213          | 3Q                 | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| c . TTCS TESTING         | TBD                    | TBD                                  | 0              | 0            |                    | 75           | 2Q                 | 0            | 0                  | 0                | 0          | 0                        |
| d . VIDS                 | MIPR                   | HUNTER AAF, GA                       | 75             | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| e . ATC SIMULATORS       | TBD                    | TBD                                  | 0              | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
|                          |                        |                                      |                |              |                    |              |                    |              |                    |                  |            |                          |
| Subtotal:                |                        |                                      | 1613           | 213          |                    | 75           |                    | 0            |                    | 0                | 0          | 0                        |

| IV. Management Services | Contract Method & Type | Performing Activity & Location | Total PYs Cost | FY 2001 Cost | FY 2001 Award Date | FY 2002 Cost | FY 2002 Award Date | FY 2003 Cost | FY 2003 Award Date | Cost To Complete | Total Cost | Target Value of Contract |
|-------------------------|------------------------|--------------------------------|----------------|--------------|--------------------|--------------|--------------------|--------------|--------------------|------------------|------------|--------------------------|
| a . ATNAVICS            | T&M                    | Dynamic Rsch Corp, Madison, AL | 1125           | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| b . MOTS                | CPFF                   | CAS, INC, HUNTSVILLE, AL       | 0              | 92           | 3Q                 | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |
| c . MEANPALS/PALS       | Various                | Various                        | 271            | 0            |                    | 0            |                    | 0            | 0                  | 0                | 0          | 0                        |

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| IV. Management Services<br>(continued) | Contract<br>Method &<br>Type | Performing Activity &<br>Location | Total<br>PYs Cost | FY 2001<br>Cost | FY 2001<br>Award<br>Date | FY 2002<br>Cost | FY 2002<br>Award<br>Date | FY 2003<br>Cost | FY 2003<br>Award<br>Date | Cost To<br>Complete | Total<br>Cost | Target<br>Value of<br>Contract |
|--|------------------------------|-----------------------------------|-------------------|-----------------|--------------------------|-----------------|--------------------------|-----------------|--------------------------|---------------------|---------------|--------------------------------|
| d. NAS/ATNAVICS<br>INTERFACE           | TBD                          | TBD                               | 0                 | 0               |                          | 130             | 2Q                       | 0               | 0                        | 0                   | 0             | 0                              |
| e. NAS/-TAIS<br>INTERFACE              | TBD                          | TBD                               | 0                 | 0               |                          | 65              | 2Q                       | 0               | 0                        | 0                   | 0             | 0                              |
| f. ATC SIMULATORS                      | TBD                          | TBD                               | 0                 | 0               |                          | 130             | 2Q                       | 0               | 0                        | 0                   | 0             | 0                              |
| g. NDB BEACON                          | TBD                          | TBD                               | 0                 | 0               |                          | 0               |                          | 0               | 0                        | 0                   | 0             | Continue                       |
| h. SBIR/STTR                           |                              |                                   | 0                 | 51              |                          | 0               |                          | 0               | 0                        | 0                   | 0             | 0                              |
| Subtotal:                              |                              |                                   | 1396              | 143             |                          | 325             |                          | 0               |                          | 0                   | 0             | Continue                       |
|  |                              |                                   |                   |                 |                          |                 |                          |                 |                          |                     |               |                                |
| Project Total Cost:                    |                              |                                   | 38188             | 2008            |                          | 2197            |                          | 0               |                          | 0                   | 0             | Continue                       |