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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - Engineering and manufacturing development** | **0604726A - Integrated Meteorological Support System** | **D85** |

| COST (In Thousands) | FY 2001 Actual | FY 2002 Estimate | FY 2003 Estimate | FY 2004 Estimate | FY 2005 Estimate | FY 2006 Estimate | FY 2007 Estimate | Cost to Complete | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| D85 IMETS (TIARA) | 1755 | 1896 | 3417 | 3364 | 3356 | 2960 | 2854 | 0 | 23804 |

**A. Mission Description and Budget Item Justification:** Integrated Meteorological System (IMETS) funds the development of evolving upgrades to the fielded system. It provides the battlefield commander at all echelons with accurate, high resolution, near real time weather data to conduct intelligence preparation of the battlefield (IPB). The IMETS is a mobile tactical automated weather data receiving, processing, and dissemination system designed to provide timely weather and environmental effects, forecasts, observations, and decision aid support to the Army. The IMETS is an Army-furnished system, which is operated by Air Force weather personnel and maintained within Army support channels. IMETS provides weather information overlays for the Common Tactical Picture, meteorological (met) messages and other tailored products. IMETS provides all Army Battle Command (ABC) Systems mission planning and situation awareness with direct client access to the IMETS 4-D (position and time) meteorological database and to the database of weather impacts on friendly and threat systems. IMETS consists of three basic configurations: 1) command post (CP) configuration for fixed facilities at echelon above corps (EAC) level where the IMETS is permanently integrated into the local area network, so a tactical IMETS is not required; 2) vehicle-mounted configuration for tactical operations where the supported echelon moves frequently; and 3) light configuration for task-organized elements of a supported echelon, integrated into a small task force, where lightweight, easily deployed core weather functions can be performed without having its own vehicle, shelter, and power source. These configurations enable support for the full range of military operations from large Major Regional Conflicts to small task forces supporting Military Operations Other Than War. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

**FY 2001 Accomplishments:**

- 247 Integrated IMETS applications to ABCS 6.0 foundation software. Continue the conversion of emerging weather applications to the various IMETS platforms, such as IMETS data ingest, weather forecast, Integrated Weather Effects Decision Aids (IWEDA), graphical user interface, and 5D data visualizations. Objective is to have all available applications running on IMETS Light, a dismounted laptop configuration. Certify DII/COE level 5 compliance for the laptop configuration. Continued to develop and integrate TAWS-A decision aids. Take IMETS Light through government acceptance testing and begin developmental testing.

**FY 2001 Accomplishments: (Continued)**

- 526 Extended the IMETS nested BFM and MM5 forecasts to 120 hours. Extend the IMETS Gridded Meteorological Database (GMDB) to incorporate latest METOC standards for common environmental data across services. Complete development of a common Atmospheric Sounding Program (ASP) to consistently post-process both BFM and MM5 data into weather hazards and features. Continue to develop a GMDB that can be hosted on the DTSS terrain data server for distributing IMETS gridded meteorological data and weather impacts database information to ABCS clients at lower echelons where there is no full IMETS capability. Continue to develop special subsets of meteorological data and products that will reside on the Joint Common Data Base (JCDB), to include hosting the GMDB on the JCDB.
- 150 Continued to develop IMETS interoperability with other BFA systems, including MCS, ASAS, AFATDS, CSSCS and AMDWS.
- 382 Continued to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
- 200 Continued test and evaluation support for ABCS digitization products.
- 250 Implemented a capability for IMETS to participate with both live and synthetic weather scenarios in live, virtual and constructive simulation exercises leading to First Digitized Corps. Develop a capability to ingest climatological and synthetic weather scenarios into IMETS for play in exercises. Interface to Air Force Combat Climatology Center and NCAR historical weather databases. Integrate to M&S through a C4I to HLA interface to allow the IMETS data to be used to support simulations and existing M&S weather servers.

Total 1755

**FY 2002 Planned Program**

- 219 Integrate IMETS applications to ABCS 6.3 foundation software. Continue to convert emerging weather effects applications to the various IMETS platforms. Refine IMETS data ingest, weather forecast, weather impact applications, graphical user interface, and 5-D data visualizations to execute on a light configuration. Implement ABCS client version of target acquisition weather software to display recognition and detection ranges of E-O sensors over the Common Tactical Picture on any ABCS system. Redesign a faster, simpler acoustics TDA prototype. Extend the period of coverage by IMETS weather forecasts to 120 hours. Investigate automated mission inputs into IWEDA from ABCS digital OP-ORD information from the JCDB or other sources.
- 230 Improve the Weather Feature application, based on user feedback and configuration management change requests, on the Common Tactical Picture. Continue enhancements to TAWS-A. Develop a nowcast capability that can ingest and fuse conventional observations to provide weather situation awareness updates within a threshold update time of 30 minutes (objective update in 10 minutes). Implement optimization ingest of artillery-met observations into IMETS forecasts.
- 300 Develop and integrate improved IWWEDA military weather effects database that can provide significantly improved weather support capability for Operation Enduring Freedom. The new IWEDA Rules cover: US Army and Air Force aviation systems and operational concepts, Special Operations Forces systems and operational concepts, Army Logistics/Combat Service Support systems and operations, as well as Afghan/Taliban threat systems. Implement automated mission inputs into IWEDA from ABCS digital OP-ORD information archived in the JCDB or other databases.

**FY 2002 Planned Program (Continued)**

- 315 Continue upgrading IMETS interoperability with other BFA systems in compliance with updates from DII COE.
- 435 Continue test and evaluation support for ABCS. Conduct a Combined DT/OA on the IMETS Light in February 2002. Conduct final security and JITC testing on IMETS Light. Obtain a Milestone III IPR decision to procure and field IMETS Light in 3QFY02.
- 397 Modify IMETS IWEDA and Contours client applications to make them independent DII-COE level 8 compliant Weather Analysis Tool segments ready for integration into GCCS. Improve the ability for joint sharing of common meteorological forecasts, weather hazards/warnings and weather impact decision aids. Develop new prototype model for weather effects on illumination to include cloud and low-visibility effects on flares and nighttime light pollution from cities. Implement model to forecast optical turbulence and its effects on target acquisition and weapons systems.

Total 1896

**FY 2003 Planned Program**

- 2112 Improve the IMETS NOWCAST capability to ingest and fuse non-conventional battlefield observations such as UAV and mobile met sensors and additional conventional observations such as Meteorological Satellite imagery and data. Along with the Navy and the Air Force, design, develop, and integrate a joint DOD standard 4-D weather database and common application interfaces to support current and future C4ISR systems. Initiate a sensitivity capability in IWEDA to forecast the timing of the changes expected in IWEDA weather impact status for each component system. Integrate automated mission inputs into IWEDA from ABCS digital OP-ORD information from the JCDB or other sources. Integrate an acoustics propogation TDA into IMETS. Complete integration of IMETS Weather Analysis into GCCS.
- 373 Develop a capability to embed nowcast processing into IMETS client applications to account for current local conditions. Implement model for weather effects on illumination to include cloud and low visibility effects on flares and nighttime light pollution from cities. Continue enhancements to TAWS-A decision aids.
- 321 Continue upgrade of IMETS interoperability with other BFA systems in compliance with updates from DII COE.
- 552 Continue test and evaluation support for ABCS.
- 59 ABCS Systems Engineering and Integration Efforts

Total 3417

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

**February 2002**

| BUDGET ACTIVITY | PE NUMBER AND TITLE | PROJECT |
|---|---|---|
| **5 - Engineering and manufacturing development** | **0604726A - Integrated Meteorological Support System** | **D85** |

| **B. Program Change Summary** | FY 2001 | FY 2002 | FY 2003 |
|---|---|---|---|
| Previous President's Budget (FY2002 PB) | 1754 | 1911 | 3425 |
| Appropriated Value | 1771 | 1911 | 0 |
| Adjustments to Appropriated Value | 0 | 0 | 0 |
| a. Congressional General Reductions | 0 | -15 | 0 |
| b. SBIR / STTR | 0 | 0 | 0 |
| c. Omnibus or Other Above Threshold Reduction | 0 | 0 | 0 |
| d. Below Threshold Reprogramming | 0 | 0 | 0 |
| e. Rescissions | -16 | 0 | 0 |
| Adjustments to Budget Years Since FY2002 PB | 0 | 0 | -8 |
| Current Budget Submit (FY 2003 PB) | 1755 | 1896 | 3417 |

| **C. Other Program Funding Summary** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 | To Compl | Total Cost |
|---|---|---|---|---|---|---|---|---|---|
| OPA 2 - SSN: BW0021-IMETS | 6954 | 2502 | 7230 | 9284 | 4953 | 4943 | 13519 | Continue | Continue |

**D. Acquisition Strategy:** The IMETS development program integrates efforts from the Air Force, Army, and OSD's DII COE. It is consistent with the development of the C4I Joint Technical Architecture-Army. The IMETS Non Developmental Item acquisition strategy proved successful in the fielding of Block I IMETS and this strategy is being continued with the Block II program. Current improvement efforts are to incorporate new numerical weather prediction forecasts and products communicated from centralized Air Force Hubs to the individual IMETS. Weather tactical decision aid upgrades and updated forecaster aids are developed to include products from Air Force initiatives. IMETS data and applications are being made accessible to Battlefield Functional Area C4I systems as clients through weather database services with the Combat Terrain Information System (CTIS) Digital Topographic Support System (DTSS) environmental database and through the Joint Common Data Base. Application modules from the Army Research Laboratory will be integrated and fielded as an upgrade to the current software baseline. These include: improvements in generation and display of higher time resolution and higher spatially resolved weather forecast and effects information; inclusion of physics-based weather decision aids and models; development of more versatile weather databases that support a variety of service and allied weather forecast models and environmental databases; development of weather applications consistent with joint METOC data standards; development of weather remote-sensing products from meteorological satellites; and ingest of battlefield sensor data to augment initializing mesoscale forecasts. IMETS functionality has been ported to a laptop computer to respond to requirements for a lighter more flexible IMETS for the highly mobile units. Fielding decision for these IMETS Lights is scheduled for 4QFY02.

| **E. Schedule Profile** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| Extend Battlescale Forecast Model (BFM) and Air Force MM5 forecast data resolutions | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| Develop/Integrate Visualization 5D program | 1-4Q | 1-4Q | | | | | |
| Develop common BFM and MM5 Atmospheric Sounding Program (ASP) post processor | 1-4Q | | | | | | |
| Develop Gridded Met Database on DTSS terrain server and support Joint Common Database products | 1-4Q | | | | | | |
| Convert emerging weather effects applications to the various IMETS platforms | 1-4Q | 1-4Q | 1-4Q | 1-4Q | | | |
| Integrated Weather Effects Decision Aid update (client and laptop integration) | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |
| Develop TAWS-A decision aids | 1-4Q | 1-4Q | 1-4Q | | | | |
| Support ABCS/IMETS integration effort | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q | 1-4Q |

| **E. Schedule Profile (continued)** | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|---|---|---|---|---|---|---|---|
| Conduct Combined DT/OT on IMETS Light | | 2Q | | | | | |
| Milestone III IPR on IMETS Light | | 3Q | | | | | |

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**5 - Engineering and manufacturing development**

PE NUMBER AND TITLE
**0604726A - Integrated Meteorological Support System**

PROJECT
**D85**

| 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 . Product Integration Efforts | GSA Task Order | Logicon RDA in Lakewood, Washington | 10416 | 338 | 1-4Q | 646 | 1-4Q | 1215 | 1-4Q | Continue | Continue | Continue |
| b . Weather Applications SW Development and Integration | MIPR | ARL at White Sands Missile Range, NM | 4250 | 438 | 1-4Q | 450 | 1-4Q | 1643 | 1-4Q | Continue | 6781 | Continue |
| c . GFE | MIPR | PM CHS, Fort Monmouth, NJ | 210 | 0 | | 0 | | 0 | | Continue | Continue | Continue |
| d . ABCS SE&I | MIPR | Fort Monmouth, NJ | 0 | 0 | | 0 | | 59 | 1Q | 0 | 59 | 0 |
| | | | | | | | | | | | | |
| Subtotal: | | | 14876 | 776 | | 1096 | | 2917 | | Continue | Continue | Continue |

Remarks: Each Task order issued using the GSA Schedule is independent of others and of relatively short term.

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**5 - Engineering and manufacturing development**

PE NUMBER AND TITLE
**0604726A - Integrated Meteorological Support System**

PROJECT
**D85**

| 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 . Documentation Coordination | MIPR | CECOM, NJ | 610 | 240 | 1-4Q | 200 | 1-4Q | 200 | 1-4Q | Continue | Continue | Continue |
| b . Program Management Support | MIPR | PMO Intel Fusion, Fort Belvoir VA | 892 | 200 | 1-4Q | 200 | 1-4Q | 200 | 1-4Q | Continue | Continue | Continue |
| | | | | | | | | | | | | |
| Subtotal: | | | 1502 | 440 | | 400 | | 400 | | Continue | Continue | Continue |

Remarks: MIPRs are used to pay for work by other government organizations and are issued incrementally contiguous with the fiscal year.

| 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 . ABCS Developmental Testing | MIPR | EPG, Ft. Huachuca, AZ | 300 | 239 | 1Q | 100 | 1Q | 100 | 1Q | Continue | Continue | Continue |
| b . Operational Testing | MIPR | ATEC, VA | 252 | 300 | 1Q | 300 | | 0 | | Continue | Continue | Continue |
| | | | | | | | | | | | | |
| Subtotal: | | | 552 | 539 | | 400 | | 100 | | Continue | Continue | Continue |

Remarks: MIPRs are used to pay for work by other government organizations and are issued incrementally contiguous with the fiscal year.

# ARMY RDT&E COST ANALYSIS(R-3)

**February 2002**

BUDGET ACTIVITY
**5 - Engineering and manufacturing development**

PE NUMBER AND TITLE
**0604726A - Integrated Meteorological Support System**

PROJECT
**D85**

| 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| Subtotal: | | | 0 | 0 | | 0 | | 0 | | 0 | 0 | 0 |

Remarks: No management services are purchased.

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Project Total Cost: | | | 16930 | 1755 | | 1896 | | 3417 | | Continue | Continue | Continue |