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

June 2001

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
5 - ENG MANUFACTURING DEV	**0604726A - INTEGRATED METEOROLOGICAL SUPPORT SYSTEM**	**D85**

COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	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)	2301	1754	1911	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, Integrated Meteorological System (IMETS), funds the development of evolving upgrades to the fielded system. It is essential to provide the battlefield commander at all echelons with accurate, high resolution, near real time weather data in order 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 c) 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 its own vehicle to shelter the system. 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 2000 Accomplishments

- 391 Integrated IMETS applications to ABCS 6.0 foundation software, including weather overlays, weather overlay provider, Joint Mapping Tool Kit map services; and delivered to CTSF for implementation in First Digitized Division. Participated in demonstrations and AWE exercises such as the Division Capstone Exercise and JCF-AWE. Began conversion of IMETS Weather Effects Workstation applications to a dismounted laptop version (UNIX and PC/NT). Provide weather symbol information/warnings on the Common Tactical Picture (CTP).

FY 2000 Accomplishments (Continued)

- 550 Extended the IMETS weather forecast and decision aid capability from 24 to 72 hr at 15 km resolution. Produced a fast analysis version of the Battlescale Forecast Model (BFM) to produce short range (3 hr) forecasts over small user-defined Areas of Interest. Started work on the BFM forecast output time resolution to one hour. Began development of a common Atmospheric Sounding Program (ASP) to consistently post-process both BFM and MM5 data into weather hazards and features. Extended the IMETS Gridded Meteorological Database (GMDB) to incorporate multiple numerical weather prediction model data (MM5, BFM and 1 deg NOGAPS), including their different data grid definitions and geographic coordinate projections. Developed an initial version of the GMDB that can be hosted on the DTSS terrain data server, and developed special subsets of meteorological data and products that will reside on the Joint Common Data Base (JCDB).
- 250 Interfaced the first release of tri-service Target Acquisition Weather Software - Army (TAWS-A) to the GMDB and IMETS. Developed a JAVA client version of IWEDA and evaluate as a prototype for platform independent IMETS applications. Improved the Vis5D visualization to support the new GMDB data sets. Developed meteograms and other new contour displays. Developed IMETS products and parameters to support Aviation Mission Planning and data visualization from the GMDB met data. Developed initial meteorological satellite remote sensing products for IMETS using the Air Force Small Tactical Terminal or other sources of multi-band met satellite imagery, and special sounder data; and configured to IMETS satellite data registration, calibration and display.
- 210 Purchased six IMETS Light test articles at $35K each for development, integration and test of weather applications being ported to the IMETS Light laptop.
- 150 Continued to develop IMETS interoperability with other BFA systems, including MCS, ASAS, AFATDS, CSSCS and AMDWS.
- 550 Continued to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
- 200 Continued to integrate ABCS digitization products and supported test and security evaluation at the CTSF.

Total 2301

FY 2001 Planned Program

- 246 Integrate IMETS applications to ABCS 7.0 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 Planned Program (Continued)

- 526 Extend 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 Continue to develop IMETS interoperability with other BFA systems, including MCS, ASAS, AFATDS, CSSCS and AMDWS.
- 382 Continue to evaluate, configure and integrate tech base prototype capabilities into operational IMETS.
- 200 Continue test and evaluation support for ABCS digitization products.
- 250 Implement 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 1754

FY 2002 Planned Program

- 219 Integrate IMETS applications to ABCS 7.0 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.
- 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 an improved nowcast capability that can ingest and fuse non-conventional battlefield observations such as UAV and mobile met sensors 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 Initiate a sensitivity capability in IWEDA to forecast the timing of the changes expected in IWEDA weather impact status for each component system. Implement automated mission inputs into IWEDA from ABCS digital OP-ORD information archived in the JCDB or other databases.
- 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/OT 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 3Q 02.

FY 2002 Planned Program (Continued)

- 412 Improve the ability for joint sharing of common meteorological forecasts, weather hazards/warnings and weather impact decision aids. Develop new IMETS products to supply to DTSS including support to heavy precipitation and flood potential warnings. 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 1911

B. Program Change Summary	FY 2000	FY 2001	FY 2002	FY 2003
Previous President's Budget (FY2001 PB)	2318	1771	1903	0
Appropriated Value	2318	1771	0	0
Adjustments to Appropriated Value	0	0	0	0
a. Congressional General Reductions	0	0	0	0
b. SBIR / STTR	0	0	0	0
c. Omnibus or Other Above Threshold Reduction	0	0	0	0
d. Below Threshold Reprogramming	0	0	8	0
e. Rescissions	-17	-17	0	0
Adjustments to Budget Years Since FY2001 PB	0	0	0	0
Current Budget Submit (FY 2002/2003 PB)	2301	1754	1911	0

FY02 was increased by $8K; dollars realigned due to DA alignment of priorities.
FY03 was increased by $13K; dollars realigned due to DA alignment of priorities.

C. Other Program Funding Summary	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Compl	Total Cost
OPA 2 - SSN: BW0021-IMETS	5445	6954	2521	0	0	0	0	0	0	0

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 has proven successful in the fielding of twenty systems since program initiation in FY 1992. This development strategy will be continued to include software modules as they mature and become part of the COE library. A common map server update is of primary focus along with increased user interoperability. Current improvement efforts are to incorporate new numerical weather prediction forecasts and products communicated from centralized Air Force Hubs to the individual IMETS and its Battlescale Forecast Model in the field. Weather tactical decision aid upgrades and updated forecaster aids are developed to include products from Air Force initiatives such as the New Tactical Forecast System and Small Tactical Terminal for high resolution domestic and foreign weather satellite data. IMETS data and applications will be 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 will be ported to a laptop computer to respond to requirements for a lighter more flexible IMETS for the highly mobile units.

E. Schedule Profile	FY 2000	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	0	0	0	0	0
Develop/Integrate Visualization 5D program	3-4Q	1-4Q	1-4Q	0	0	0	0	0
Develop common BFM and MM5 Atmospheric Sounding Program (ASP) post processor	1-4Q	1-4Q		0	0	0	0	0
Develop Gridded Met Database on DTSS terrain server and support Joint Common Database products	1-4Q	1-4Q		0	0	0	0	0
Convert emerging weather effects applications to the various IMETS platforms	1-4Q	1-4Q	1-4Q	0	0	0	0	0

E. Schedule Profile (continued)	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Integrated Weather Effects Decision Aid update (client and laptop integration)	1-4Q	1-4Q	1-4Q	0	0	0	0	0
Develop TAWS-A decision aids	1-4Q	1-4Q	1-4Q	0	0	0	0	0
Support ABCS/IMETS integration effort	1-4Q	1-4Q	1-4Q	0	0	0	0	0
Conduct Combined DT/OT on IMETS Light			2Q	0	0	0	0	0
Milestone III IPR on IMETS Light			3Q	0	0	0	0	0

ARMY RDT&E COST ANALYSIS(R-3)

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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 . Product Integration Efforts	GSA Task Order	Logicon RDA in Lakewood, Washington	10416	338		661		0	0	0	0	Continue
b . Weather Applications SW Development and Integration	MIPR	ARL at White Sands Missile Range, NM	3295	437		450		0	0	0	0	Continue
c . GFE	MIPR	PM CHS, Fort Monmouth, NJ	210	0		0		0	0	0	0	Continue
d . Inflation Withhold			8	0		0		0	0	0	0	0
e . SBIR/STTR			47	0		0		0	0	0	0	0
Subtotal:			13976	775		1111		0		0	0	Continue

Remarks: Each Task order issued using the GSA Schedule is independent of others and of relatively short term. Cost to complete, Total Cost and Target value of the Contract are not applicable to this acquisition strategy.

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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 . Documentation Coordination	MIPR	CECOM	610	240		200		0	0	0	0	Continue
b . Program Management Support	MIPR	PMO Intel Fusion, Fort Belvoir VA	892	200		200		0	0	0	0	Continue
Subtotal:			1502	440		400		0		0	0	Continue

Remarks: MIPRs are used to pay for work by other government organizations and are issued incrementally contiguous with the fiscal year. Cost to Complete, Total Cost and Target Value of the Contract are not applicable.

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. Huchuca, AZ	300	239	1Q	100	1Q	0	0	0	0	Continue
b . Operational Testing	MIPR	ATEC	252	300	1Q	300		0	0	0	0	Continue
Subtotal:			552	539		400		0		0	0	Continue

Remarks: MIPRs are used to pay for work by other government organizations and are issued incrementally contiguous with the fiscal year. Cost to Complete, Total Cost and Target Value of the Contract are not applicable.

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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:			16030	1754		1911		0		0	0	Continue