

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)							DATE February 2000		
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3				R-1 ITEM NOMENCLATURE Advanced Concept Technology Demonstrations PE 0603750D8Z					
COST (In Millions)	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	Cost to Complete	Total Cost
Total Program Element (PE) Cost	80.281	104.976	116.425	118.242	120.713	123.175	125.630	Continuing	Continuing
ACTDs/P523	80.281	104.976	116.425	118.242	120.713	123.175	125.630	Continuing	Continuing

(U) **A. Mission Description and Budget Item Justification**

(U) **BRIEF DESCRIPTION OF ELEMENT:** The Department of Defense (DoD) recognizes the need to rapidly develop and field new technological capabilities, and to explore new and innovative operational and organizational concepts associated with those capabilities. Such advances are critical to the objective of achieving a “revolution in military affairs” to support the Chairman’s *Joint Vision 2010*. Advanced Concept Technology Demonstrations (ACTDs) are low risk vehicles for pursuing that objective. ACTDs are capability demonstration and evaluation programs in which the development and employment of technology and innovative, operational concepts by the military user are the primary focus. The demonstrations involve a materiel development organization that develops the technology, and a warfighting organization responsible for assessing the military utility. In addition to stimulating innovation, ACTDs offer three other significant opportunities. They provide experienced combat commanders with an opportunity to develop operational concepts and operational requirements to fully exploit the capabilities being evaluated. They allow the users an opportunity to assess the military utility of the proposed capability prior to a major acquisition decision. They also provide the Services with a mechanism for compressing acquisition cycle time, thus significantly improving their response to priority operational needs. As such, ACTDs are at the foundation of the DoD acquisition reform process. They do not substitute for formal DoD acquisition procedures, but do accelerate these procedures for technologies, which are deemed by the applicable combatant commands to have demonstrated military utility. In FY 1999, ACTDs also became an integral part of the Joint Warfighter Experimentation process. U.S. Joint Forces Command (JFCOM) Joint Experimentation Plan 00 identified ten ACTDs to be evaluated during Millennium Challenge, the major, all-Service joint experiment planned for FY 2000. The Deputy Under Secretary of Defense (Advance Systems and Concepts) (DUSD (AS&C)) worked closely with JFCOM to prepare Campaign Plan 01 in order to insure ACTDs integrate technology and develop new concepts of operation to fully leverage with and integrate into future joint experiments.

(U) The Military Departments and Defense Agencies provide most of the funding (80–90 percent) for ACTDs. This demonstrates significant Service/Agency commitment to the ACTD. Funding from this program element is used: 1) to support actual demonstrations and exercises, 2) to provide hardware to demonstrate military utility, and 3) to fund interim capability operations and support for up to two years after the operational demonstration phase of the ACTD. This two-year phase provides the Service, Agency, and operators with adequate time to continue to address the issues of supportability, maintainability and training identified by the ACTD.

**UNCLASSIFIED**

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

(U) Both the Science and Technology (S&T) and the warfighter communities submit candidate ACTDs in January of each year. The candidates proposed by the S&T community reflect technological opportunities enabled by recently demonstrated technology. The candidates proposed by the warfighter community (Joint Chiefs of Staff (JCS), Unified Commanders in Chief (CINCs) and Service operational organizations) respond to a deficiency in military capability or to an emerging military need. For each candidate, it is necessary to confirm that the proposed concept is based on technology that is sufficiently mature, and that the capability addresses a priority military need.

(U) The maturity of the technology associated with the proposed capability is assessed by the DUSD (AS&C), with assistance of senior members of the science and technology community (known as the Breakfast Club). The Joint Requirements Oversight Council (JROC) prioritizes the ACTD candidates by military need. The principal management tools for the ACTD are the Implementation Directive and Management Plan. Each approved ACTD will be described in top-level documents that provide details of the demonstration/evaluation, the main objectives, approach, critical events, measures of success, transition options, participants, schedule, and funding. Each ACTD receives considerable review and oversight at high levels within the Department.

(U) The typical timeline of two-to-four years for the operational demonstration phase of an ACTD is compressed compared to normal timelines for fielding an operational capability. These shorter schedules are made possible because ACTDs incorporate mature or nearly mature technology and, therefore, forgo time consuming technology development and technical risk reduction activities. At the end of the ACTD, the user sponsor is able to determine if the capability provided by current technology has sufficient utility to warrant procurement. If there are significant shortcomings, their options are to either pursue an advanced technology demonstration to improve performance, or not pursue the technology any further at this time. In cases where the operational user is satisfied the prototype has significant utility, the prototype can be used as an interim capability. The Department then moves quickly to enter the formal acquisition process and to acquire needed quantities.

(U) The request for FY 2001 candidate ACTDs was issued October 1999. Proposals were received from the CINCs, Services, other DoD Agencies, and industry in January 2000. Candidates are organized into the *Joint Vision 2010* operational concepts of Dominant Maneuver, Precision Engagement, Full Dimensional Protection and Focused Logistics. Plans are being finalized with the Joint Staff to begin the process of reviewing the candidates for FY 2001 ACTDs in February/March 2000. Funding for FY 2001 ACTDs is approximately \$14.0 million.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) PROGRAM ACCOMPLISHMENTS AND PLANS:**

**(U) FY 1999 Accomplishments:** All ACTDs initiated in FYs 1995 through 1999 have been reviewed for objectives, content and management. This includes in-depth review by some of the ACTD operational sponsors such as U. S. Joint Forces Command (JFCOM). There were several general, notable achievements for ACTDs in 1999. Approximately twenty percent of all ACTDs were deployed, or requested for deployment, to Operation Allied Force. Some remain in theater as part of Kosovo peacekeeping operations. In addition, two ACTDs received national-level recognition awards for excellence: Link-16 won the Microsoft Windows Worldwide Open Product of the Year Award and Air Base/Port Biological Detection won the David Packard Excellence for Acquisition Program Management Award. Eleven new ACTDs were started in FY 1999: Battle Damage Assessment in Joint Targeting Toolbox, Coherent Analytical Computing Environment, Common Spectral MASINT Exploitation, Compact Environmental Anomaly Sensor II, Force Medical Protection/ Dosimeter, Human Intelligence and Counterintelligence Support Tools, Joint Medical Operations - Telemedicine, Joint Theater Logistics, Personnel Recovery Mission Software, Small Unit Logistics and Theater Air and Missile Defense Interoperability. The selection process for FY 2000 ACTDs began early in FY 1999. Twelve final ACTD candidates, of the forty received from the Unified Commands, the Services and Defense agencies, were considered for final selection. Candidates cover a broad range of technologies and needs, including: intelligence, reconnaissance, surveillance, information technology and security, satellite protection, targeting enhancement, communications and crisis planning and management. These candidates were evaluated for technical maturity by the Breakfast Club and for operational need and utility by the Joint Staff Joint Warfare Capability Assessment (JWCA) process. The JROC then prioritized these 12 candidates and eleven were finally selected based upon funding availability. FY 1999 funds were transferred to the executing services/agencies in the amount of \$80.281 million.

**(U)** 1999 accomplishments include:

FY 1995 Starts:

- Advanced Joint Planning (AJP): Continued interim capability support and hardening of products for transition to GCCS.
- High Altitude Endurance Unmanned Aerial Vehicles (HAE-UAV): The Global Hawk unmanned air vehicle has completed air worthiness and sensor payload test flights, commenced operational field demonstrations, exercises, and possible contingency deployments, enabling early user involvement to evaluate military utility. A total of four Global Hawks are planned to take part in the operational demonstrations, along with two complete sets of the associated Common Ground Segment equipment. Global Hawk has flown 41 times for 493 flight hours, most at operational altitudes above 60,000 feet. Air Vehicle #2 crashed on 29 March 1999 due to human error. Air Vehicle #1 has successfully participated in four Operational Demo flights. Global Hawk sensors (electro-optical, infrared, and synthetic aperture radar systems) and ground control station performance is excellent. The DarkStar UAV portion of this ACTD was terminated by Under Secretary of Defense (Acquisition & Technology) after a 22 January 1999 review of the program.
- Joint Countermine (JCM): JFCOM published the military utility assessment report. Provided those technologies that demonstrated utility to JFCOM for continued operations and evaluation during the residual phase. Joint Countermine Operational Simulation (JCOS) transitioned to STOW, and the Countermine Command, Control, Communications, Computers and Intelligence (C4I) system began transition to the Global Command and Control System

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

(GCCS). Further evaluated five other novel systems in conjunction with several fleet exercises. Several of the novel systems transitioned into acquisition and other ongoing programs. Transition efforts for the remaining novel systems were evaluated and coordinated with user and service agencies. Continue interim capability support.

- Precision Signals Intelligence (SIGINT) Targeting System (PSTS): Continued interim capability providing a limited operations capability and transitioned into a long-term program to upgrade all airborne and National SIGINT systems to provide precision geolocation of Electronics Intelligence (ELINT) and Communications Intelligence (COMINT) emitters.
- Rapid Force Projection Initiative (RFPI): Transitioned the following systems to interim capability status: Hunter Sensor Suite, Remote Sensory/ Integrated Acoustic System, High Mobility Artillery Rocket System (HIMARS) and the Automated 155 Howitzer and Digital Command and Control, in the form of a Light Digital Tactical Operations Center (LDTOC).
- Synthetic Theater of War (STOW): Conducted additional mission rehearsal and training exercises in support of Joint Forces Command (JFCOM) and continued technology transition to Joint Simulation System (JSIMS) and the Services simulation systems. Used as central element of JFCOM Joint Warfighting Experiment's Attack Operations thrust. JFCOM has budgeted for continued operation and sustainment of the system components beginning in Fiscal Year 2000. Concluded interim capability period and ended the ACTD.

**FY 1996 Starts:**

- Air Base/Port Biological Detection: Fielded residuals to four sites in two theaters (two in CENTCOM and two in PACOM). Residuals consist of detection network, C4I connectivity and downwind hazard prediction, unmasking procedures, commercial half-mask test, DoD sampling kits and decontamination equipment.
- Battlefield Awareness and Data Dissemination (BADD): Deployed BADD software to PACOM and began the operational utility assessment. Integrated the BADD software with the Defense Information Systems Agency (DISA) Information Dissemination Management (IDM) commercial-off-the-shelf (COTS)/governments-off-the-shelf (GOTS) products in preparation for fielding to selected CINCs in 3rd Quarter of FY 2000. Initiated formal segmentation of the BADD/DISA products for integration into the Defense Information Infrastructure (DII) Common Operating Environment (COE) and GCCS. Conducted four collaborative assessments with operational users at multiple agencies/distributed service sites (Army, Navy, Air Force, Special Operations Forces (SOF) and Joint). Coordinated with the SOF community to determine how these capabilities could rapidly be integrated into SOF operations.
- Combat Identification (CID): Completed military utility assessment report. Conducted Single Channel Ground and Airborne Radio System (SINCGARS) System Improvement Program (SIP)+ and SINCGARS SIP+ Forward Operating Forward Air Controller (FOFAC) operational tests. Installed Battlefield Combat Identification System (BCIS) trainers as leave-behind assets at Ft Hood's Command and Control Technical Training (CCTT) facilities. Continued interim capability assessments for SINCGARS SIP+, SINCGARS SIP+ FOFAC, and Situational Awareness Data Link (SADL) Forward Air Controller (FAC). Transitioned to fielding the Situation Awareness Data Link (SADL) for close air support F-16s and assisted the transition of the Battlefield Combat ID System (BCIS) to LRIP for vehicle to vehicle identification capabilities. Participated in the All Services Combat ID Evaluation Team (ASCIET) 99 exercise.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Counterproliferation I (CP I): Delivered leave-behind assets and initiated residual support phase with U.S. European Command (EUCOM.) Hard target smart fuze (HTSF), advanced unitary penetrator (AUP) and targeting tools deployed for Kosovo support with great success. EUCOM final military utility assessment was completed. HTSF began engineering/manufacturing development (EMD), AUP entered streamlined EMD/low rate initial production (LRIP) and transition activities for other CP I elements continued.
- Joint Logistics (JL): Developed data access and mediation capability to pull information from disparate data sources and to share data products between applications through a common user interface. Derived and graphically displayed planned force capability estimates for logistic units and developed the capability to track and visualize inventory status, flow, and consumption. Developed visualization framework for displaying results using mapping, charting, tables and scheduling.
- Miniature Air Launched Decoy (MALD): Completed 23 flights for a total of 211 minutes flight time. Nine flights were terminated early due to engine problems, interference with on-board guidance systems, and other sub-system failures; two others due to range safety issues. Nine flights were very successful; the longest flight was 25 minutes long. An electronic 'decoy' package, the Signature Augmentation System, was successfully flight tested, and is very effective. Four Operational Demonstration flights were conducted on 11 Sep 99. All four flights terminated early due to the wrong aircraft ejection cartridges used to 'punch' the decoys off the F-16 carriage aircraft. The excessive force caused by these cartridges cracked the fuel tanks on each vehicle causing engine fires and shortened profiles. Residual decoy vehicles will be available for follow-on testing efforts.
- Navigation Warfare (NavWar): Completed demonstration phase. Accomplishments include: prevention equipment demonstrated and evaluated; prevention CONOPS developed; need for GPS training demonstrated; need for GPS jamming in military exercises demonstrated; procedures for GPS jamming established; effectiveness of Dual Frequency/Enhanced Reacquisition demonstrated; and avionics equipment prepared for deployment.
- Semi-Automated Imagery Processing (SAIP): Conducted final military utility assessment during which SAIP successfully processed synthetic aperture radar (SAR) imagery from both the U2 and Global Hawk aircraft in an operational scenario. SAIP residuals were delivered to the Army and the Air Force. Joint Program Office established.
- Tactical Unmanned Aerial Vehicle (TUAV): Conclude interim capability period. Residual systems were utilized to support evaluation of a TUAV follow-on acquisition, as well as supporting concept of operations development at the Joint Warfighting Center.
- Theater High Energy Laser (THEL): Hardware failures set the program back approximately one year. However, all technical issues were being resolved. The four subsystems were 80-95% complete. The laser subsystem achieved 'first light' at TRW's Capistrano Test Site in California. The complete system was transported to the High Energy Systems Test Facility (HELSTF), White Sands Missile Range, New Mexico.

FY 1997 Starts:

- Chemical Add-On to Air Base/Port Bio Detection: Fielded residual assets at sites in two theaters. Residuals consist of (48 each) chemical sensors fully integrated into the airbase/port reporting, display and command and control network.
- Counterproliferation II (CP II): The ACTD Advanced Unitary Penetrator (AUP) has been selected for Conventional Air-Launched Cruise Missile. Tactical Land Attack Missile (TLAM) penetrator integration and standoff platform designs completed. Chemical point detector evaluated. Initiated new CONOPS

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

development for standoff counter force operations.

- Extending the Littoral Battlespace (ELB): Conducted Major System Demonstration (MSD) I during Operation Kernel Blitz 99 using the Third Fleet and First Marine Expeditionary Force as operational forces, supported by other U.S. Pacific Command component forces. Successfully demonstrated proof-of-principle, employing off-the-shelf technologies to create an over-the-horizon, high bandwidth, tactical information and data network. Post-MSD I activities included an initial military utility assessment and determination of interim residual and/or transition opportunities.
- Information Operations Planning Tools (IOPT): Completed successful evaluation in Joint Expeditionary Force Experiment 99, which allowed Air Intelligence Agency (AIA)/Air Force Information Warfare Center (AFIWC) and Central Command (CENTCOM) to further refine operational requirements and enhance the capability of the tool. CENTCOM used IOPT to allow real time update of information operations plans by Central Air Forces (CENTAF) and the Joint Information Operations Center (JIOC). Naval Information Warfare Agency (NIWA) installed IOPT and started computer-based training and familiarization for their Navy central (NAVCENT) support elements.
- Integrated Collection Management (ICM): Completed Phase I development and began Phase II. Phase I capabilities completed include: integration and employment of main software modules; development and coordination of reengineered intelligence, reconnaissance and intelligence (ISR) collection management across tactical, theater and national sensors.
- Joint Advanced Health and Usage Monitoring System (JAHUMS): Initiated Phase II detail design, fabrication and testing of five technology modules. Baseline system acquired and installed on H-53 aircraft and flight tested. Open systems implementation process developed and presented to Defense Systems Management College and at industry symposium. ACTD designated an OSD Pilot Program for Open Systems implementation.
- Military Operations in Urban Terrain (MOUT): Completed three Army and two Marine experiments. Assessed MOUT operational concepts, tactics, techniques and procedures. Conducted down-selection for best-in-class prototype hardware and software based on operational performance, user acceptance, technical risks and affordability. Implemented systems integration, interoperability assessments, and diagnoses of advanced technology candidate products. Conducted two joint company-level integrating experiments for interoperability assessments and refinement. Developed plans for MOUT Advanced Concepts Excursion to demonstrate and evaluate more advanced science and technology-based technologies for application in an urban warfare environment. Conducted modeling and simulation (force effectiveness analyses) to quantify military utility of advanced technology candidate products.
- Rapid Terrain Visualization (RTV): Completed detailed technical and operational study and selected optimum radar and platform for collection of high-resolution digital elevation data. Acquired de Havilland DHC-7 aircraft for collection platform at no cost to the government through the Army Trade-A-Plane program. Completed iterative upgrade of terrain analysis workstations within topographic units of XVIII Airborne Corps and III Corps. Demonstrated enhanced semi-automated feature extraction capability using commercial satellite imagery. Completed collection of high-resolution digital topographic data in support of the XVIII Airborne Corps. Installed and demonstrated version 3.0 of semi-automated topographic data generation software at XVIII Airborne Corps testbed and III Corps topographic units.

FY 1998 Starts:

- Adaptive Course of Action (ACOA): Continued CINC-level software integration. Demonstrated the ACOA concept of collaborative planning operations at

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

PACOM and three remote sites. This demonstration also tested the military utility of the Web Based Planner, Odyssey, and LEIF. Proliferated ACOA Version 1 to Joint Task Force Computer Network Defense (JTF CND) locations and assisted in development of their collaborative concept of operations (CONOPS).

- C4I for Coalition Warfare (C4ICW): Tested basic message gateway and the data replication mechanism. The former will be integrated into the Maneuver Control System, V12.1, as part of the initial ACTD residual. The developed international data structure will be embedded in the common database for the Army Battle Command System upgrade for the First Digitized Division.
- High Power Microwave (HPM): Conducted military utility assessment and ended the ACTD. Demonstrated the capability to neutralize specific targets in a real-world environment. Validated logistics, training and maintenance assumptions applied to the operational use of this specific system.
- Information Assurance: Automated Intrusion Detection Environment (AIDE): Continued sensor bridge development. Installed/upgraded additional AIDE Systems at 15 sites and implemented database and design changes for new sensor integration, improved visualization and increased correlation capabilities.
- Joint Biological Remote Early Warning System (JBREWS): Completed fabrication of components and the test design plan. Completed a series of military utility assessments and tests of components.
- Joint Continuous Strike Environment (JCSE): Continued concept of operations refinement. First version of functional prototype completed for all four modules (target prioritization, weapons availability monitoring, weapons-target pairing and airspace deconfliction. Defined plan for integration into Global Command and Control System. Submitted proposal for JEFX 00 Exercise with AF's Air Operations Decision Aid (AODA) program.
- Joint Modular Lighter System (JMLS): Matured concept design via an integrated multidisciplinary approach. As risk reduction measures, fabricated and tested a full-scale engineering mockup of the connector, and modeled and tested the propulsor at 1:5 scale to evaluate thrust degradation characteristics while underway. Released final designs to fabrication. Developed manufacturing plans, required jigs and fixtures, and began fabrication. Initiated engineering tests with a set of in-water assembly trials followed by unit level training. Demonstrated the connection system in open water near Fort Story, Virginia.
- Line-of-Sight Anti-Tank (LOSAT): Integrate IMU with missile guidance electronics and conduct verification tests. Complete update of weapon system, fire unit and missile hardware and software requirements. Complete fire unit electronics and missile ALR preliminary designs and initiate breadboard fabrication. Complete missile structural design. Conduct initial program design review and initiate fire unit and missile long lead time procurement. Initiate fire unit operational and test software development effort.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Link - 16: Completed operational demonstration and warfighter assessment activities at the Joint Integration Test Center (JITC). Per request from NATO/SHAPE, the Link 16 Rosetta system (including data link management and translation functions) was implemented in theater to support Operation Allied Force in June 1999. The system improved the multi-tactical data link network in support of sustained Balkans Operations. Implemented in the Combined Reporting Center (CRC) at Aviano Airbase, Italy (for data link system management) and the Combined Air Operations Center (CAOC) at Vincenza Airbase, Italy (for translation and real-time display functions). Now being implemented in theater to support peace-keeping operations (requirements articulated via message from 5th Allied Tactical Air Forces (5ATAF)).
- Migration Defense Intelligence Threat Data System (MDITDS): Installed in conjunction with the Joint Guard Tactical Operations Authority (TOA). Initiated integration of the threat summary capability. Held a functional requirements definition conference in theater with all users represented. European Command (EUCOM) requested acceleration of delivery schedule.
- Precision Targeting Identification (PTI): Transitioned the Advanced Target Detection System into an acquisition program. Demonstrated C-130 OSSCAR Roll-On/Roll-Off (RO/RO) C4ISR system at All Service Combat Identification Evaluation and Testing (ASCIET) 99 exercise. Demonstrated the spectral sensor for stand-off detection of camouflaged targets and go-fast boats at ASCIET 99. Following ASCIET 99, the sensor was deployed for Kosovo support. Demonstrated integrated engagement with off-board cueing and handover to on-board precision sensors for target location and identification. Completed system end-to-end validation flight test of the laser radar (LADAR) system in a dynamic environment. Completed Preliminary Design Review of the LADAR optical head for the Tornado fighter aircraft.
- Space Based Space Surveillance Operations (SBSSO): Continued contributing sensor operations for the Space Surveillance Network (SSN) and performed additional development for improving concept of operations and productivity.
- Theater Precision Strike Operations (TPSO): Commenced three-year series of annual user demonstrations. Conducted baseline assessment in concurrence with U.S. Forces Korea Ulchi Focus Lens Exercise.
- Unattended Ground Sensors (UGS): Conducted hand-emplaced and air-dropped sensor emplacement demonstrations and field tests. Deployed UGS to theater for warfighter support. Completed transition to acquisition plan and CONOPS for use of sensors operationally.

FY 1999 Starts:

- Battle Damage Assessment in Joint Targeting Toolbox (BDA in JTT): Tested basic message gateway and the data replication mechanism. The former will be integrated into the Maneuver Control System, V12, as part of the initial ACTD residual. The developed international data structure will be linked via mapping that will eventually be embedded in the common database for the Army Battle Command System upgrade.
- Coherent Analytical Computing Environment (CACE): Developed and prototyped an initial data warehouse for maintenance data from three fleet Harrier II squadrons, creating a shared data/information environment, as well as initial versions of a personal digital assistance and immersive user interface.
- Common Spectral MASINT Exploitation Capability (COSMEC): Completed demonstrations at ASCIET 99 and at the Joint Expeditionary Forces Exercise 99. Completed testing at the Joint Intelligence Test Facility. Supported CINC EUCOM field assessment.
- Compact Environment Anomaly Sensor II: Developed the system and commenced testing.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Force Medical Protection/ Dosimeter: Developed the field evaluation plan for Phase I prototype passive chemical sampler and the concept of employment, using simulated Phase II samplers. Acquired Phase I prototypes and planned testing to determine selectivity and sensitivity. Conducted technical evaluation of Phase II candidate technologies and select technologies for integration into Phase II sampler.
- Human Intelligence and Counterintelligence Support Tools (HICIST): Obtained test items, initiated integration and conducted a mini military utility assessment at Ft. Bragg. Objectives are to: 1) demonstrate, integrate and assess tools to enhance national-to-tactical HUMINT and counterintelligence targeting, dissemination and collection; and 2) improve strategic-to-tactical concepts of operation and architecture.
- Joint Medical Operations - Telemedicine (JMO-T): Demonstrated feasibility of a tactical communication network to provide cost-effective data transport far forward. Prototyped and demonstrated software/hardware suitable for far forward use. Demonstrated "reachback" capability from forward elements to sustaining base clinical expertise.
- Joint Theater Logistics (JTL): Developing a near-real-time capability to provide warfighters, both operators and logisticians, with a shared, web-based, focused logistics view of support capabilities during planning and execution of operational courses of action. User requirements were collected and validated and detailed planning and concept development actions leading to contract initiation were completed.
- Personnel Recovery Mission Software: Conducted user 'beta' testing. Commenced test and evaluation of core software. Completed development test and evaluation plan.
- Small Unit Logistics: Completed tactical deployment of decision support tools and a logistics information system via web-based technologies, focusing on reducing the logistics response time and footprint. Commenced a two-year software integration based on data warehousing and web-based information dissemination. Concept will be demonstrated in an incremental lead-service exercise evaluation process. First year emphasis was on supply and maintenance software systems.
- Theater Air Missile Defense Interoperability (TAMDI): Developed the plan to demonstrate the capability to interface Patriot radar measurements data with the Cooperative Engagement Capability (CEC) composite air picture. Will also demonstrate real-time target track data exchange between AEGIS and PATRIOT weapons systems.

(U) FY 2000 Plans: Transition those ACTDs that have successfully demonstrated military utility and been determined to warrant acquisition. Continue development and operational demonstration of the remaining FY 1995-1999 ACTDs, and start new FY 2000 ACTDs in accordance with planned schedules. Continue the annual process of developing and structuring new candidate ACTDs to rapidly address user needs and address issues identified in *Joint Vision 2010*. Some ACTDs will remain deployed in the Kosovo theater as part of ongoing peacekeeping operations. Funding will continue for all active previous ACTDs, including the new FY 2000 ACTDs, for a total of \$104.976 million.

(U) Other significant plans for FY 2000 are:

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**FY 1995 Starts:**

- Advanced Joint Planning : The Automated Joint Monthly Readiness Review (AJMRR), and the Joint Readiness Assessment Management System (JRAMS) will complete compliance certification with the Global Command and Control System (GCCS) common operating environment (COE). Final TPEdit, FMEdit, COAST and Target enhancements will be delivered to DISA D6. Conclude the interim capability period and end the ACTD.
- High Altitude Endurance UAVs: Complete operational demonstration period and military utility assessment. Conclude the interim capability period and end the ACTD. Continue normal system acquisition activities.
- Joint Countermine: Complete the full integration of the Joint Countermine Application (JCA) to run on all current service command, control, communications and intelligence architectures and to achieve DII COE certification. Conclude the interim capability period and end the ACTD.
- Precision SIGINT Targeting System: Continue interim capability period support.
- Rapid Force Projection Initiative: Conclude the interim capability period and end the ACTD.

**FY 1996 Starts**

- Airbase/Port Biological Detection System: Continue interim capability and residual maintenance of detector networks, provide depot repairs and spares, initiate upgrade of sampling system and maintain ongoing operator training at four sites in two theaters.
- Battlefield Awareness and Data Dissemination: Field BADD products to selected CINC's six months prior to the end of the ACTD. Continue upgrading capability, based on warfighter input/feedback, to provide a more enhanced version to the CINC's in the latter part of the fiscal year. Conclude transition period and end the ACTD. Handoff capability to DISA for operations and maintenance support.
- Combat Identification: Support interim capability assets for a last year of continued operation and obtain additional user feedback on military utility and maintainability. Continued operational support provides a mechanism from which critical features for the continued development of "combat identification" technologies emerge. Conclude interim capability period and end the ACTD.
- Counterproliferation I: Support residuals for further operational feedback to assist system engineering, integration and production activities. Continue to support exercises and concept of operations (CONOPS) development for EUCOM. Complete interim capability period and end the ACTD.
- Joint Logistics: Expand Joint Decision Support Tool (JDST) capability to compare planned and actual logistic unit support capabilities at specific nodes over time. Develop the capability to generate a below-the-line logistic force structure based upon operational courses of action. Continue joint demonstrations and military utility assessments. Transition JDSTs to GCSS through DISA.
- Miniature Air Launched Decoy: Conclude the interim capability period and end the ACTD.
- Navigation Warfare: Continue interim capability period. Residual equipment to be utilized in support of the Joint Global Positioning System Combat Effectiveness (JGPSCE) joint test and evaluation.
- Semi-Automated MINT Processing: Support the Army vehicle version and the Air Force rack version of the SAIP residuals. Revise the CONOPS and finalize transition plans. Conclude the interim capability period and end the ACTD.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Theater High Energy Laser: Begin laser set-up at White Sands Missile Range early in the fiscal year, followed by system integration and functional testing. System testing with single and salvo engagements of Katyusha rockets will be conducted during December 1999 - April 2000. At the conclusion of the testing in mid-year, the THEL system will be shipped to Israel for development of operational concepts, training and deployment along the northern border. ACTD is ended.

**FY 1997 Starts**

- Chemical Add-On to Air Base/Port Biological Detection: Conclude interim capability and residual maintenance, training and field support at four sites in two theaters. End the ACTD.
- Counterproliferation II: Continue standoff platform, penetrator and fuze tests against a surrogate soft biological facility. Continue mini-UAV and dispenser pods integration for collateral effect assessment. Demonstrate new weapon delivery tactics to achieve penetration into hard facilities containing nuclear/biological/chemical (NBC) materials. Fabricate EMD prototypes and begin test program for the Tactical Low Altitude Missile (TLAM) penetrator.
- Extending the Littoral Battlespace: Refine MSD I architecture and technology enhancements. Participate in two Limited Objective Experiments (LOEs) with operating forces in preparation for MSD II in FY 2001.
- Information Operations Planning Tool: Conclude segmentation into the Defense Information Infrastructure/Common Operating Environment (DII/COE) and complete interface to MIOB 2.0. User evaluation and training will continue during BLUE FLAG 00-1. Provide sustainment and support of IOPT to CENTCOM and CENTAF.
- Integrated Collection Management: Develop operations and intelligence, surveillance and reconnaissance synchronization matrix and automate interfaces to collection platforms and data sources. Improve reengineered integration collection management processes. Connect collection management nodes for collaboration. Continue transition planning and conduct field testing and military utility assessments.
- Joint Advanced Helicopter Usage and Monitoring System: Complete fabrication, bench and flight testing of technology modules. Install baseline system and flight test on H-60 aircraft. Begin installation of technology modules on squadron aircraft and conduct training for operational and maintenance crews. Develop health and usage monitoring system cost/benefit model and begin data collection.
- Military Operations in Urban Terrain: Conduct MOUT Advanced Concepts Excursion. Complete systems integration assessments and refinements. Acquire products and prototypes for the culminating demonstration (CD) and for interim operational capability. Complete New Equipment Training (NET) for CD. Conduct the MOUT Culminating Demonstration.
- Rapid Terrain Visualization: Acquire and process high-resolution digital elevation data set and commercial satellite imagery in direct support of XVIII Airborne Corps Warfighter Exercises (WFXs). Exploit multi-spectral and radar imagery to accelerate the terrain feature extraction process using the prototype RTV database generation system. Continue iterative upgrades of workstations and software at XVIII Airborne Corps and III Corps. Demonstrate RTV process in the Integration and Evaluation Center (IEC), including capabilities for rapid elevation data collection and semi-automated extraction of feature data. Continue migration of selected RTV capabilities from XVIII Airborne Corps to III Corps elements for further user evaluation. Complete modifications to de Havilland DHC-7 aircraft, including installation and integration of RTV Light Detection and Ranging (LIDAR) and Infrared Synthetic

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

Aperture Radar (IFSAR) sensors and onboard processing capability. Develop an RTV Transition Plan to address transition of the ACTD products into the acquisition process.

**FY 1998 Starts:**

- Adaptive Course of Action: Continue CINC-level software integration. Participate in Tempo Brave Exercise and gather metrics on plan generation, execution monitoring, re-planning, and user evaluation. Continue integration with Campaign Object, segment applications, and deliver first complete version of ACOA system to the Global Command and Control System in the April 2000 time frame. Delivered system will include improved versions of Web Planner, Odyssey, and LEIF, as well as the Campaign Object server, Geospatial Force Planning Tool, Virtual Books, Intelligent Process Management, Facilitate.com, and MASH.
- C4I for Coalition Warfare: Conduct a demonstration, in the context of a coalition command post exercise, of the integrated message gateway. Data replication mechanism development and testing will be completed. Message formats will be fielded in the Army's Maneuver Control System (MCS).
- Joint Biological Remote Early Warning System: Continue field tests of ACTD components at Dugway Proving Grounds. Commence initial provision of residual assets (Sentry, Sample Identification, and Sensor Network Command Post Units) to EUCCOM. Continue CONOPS development and training.
- Information Assurance: Automated Intrusion Detection Environment: Selection of additional sites will be conducted based on a representative model of the DII. Surveys for the new sites will be conducted and new sensors identified will be integrated into the AIDE environment. Sensor data and data correlation will be fine tuned to reduce false alarm rates. Hardware and software upgrades for all the ACTD sites will be purchased and installed. All additional installation and training will be completed. Final reports documenting the ACTD will be written and formalized. A final demonstration of the system will be conducted.
- Joint Continuous Strike Environment: Conduct Military Utility Assessment in Fleet Battle Experiment Foxtrot and exercises in the Korean theater. Continue concept of operations refinement. Complete functional software.
- Joint Modular Lighter System: Joint Modular Lighter System: Complete fabrication of powered and non-powered modules and ancillary hardware. Conduct sea trials of powered subsystems. Contractor to execute technical testing of JMLS hardware in demonstrations supported by Government furnished equipment. Technical testing to address system performance and interface issues. Complete unit level training and conduct unit and joint demonstrations to assess military utility. Conclude the interim capability period and end the ACTD.
- Line-of-Sight Anti-Tank System: Continue fire unit and missile detail level design and analysis. Hardware tooling design and fabrication will begin. Initiate fire unit and missile piece part hardware fabrication. Complete fire unit operational and test software design; initiate code development and test. Complete update of missile operational software requirements and initiate software update. Complete hardware-in-the-loop and closed loop simulation software upgrades and initiate hardware integration.
- Link-16: Continue interim capability period. Continue transition of Rosetta technology into various tactical data link programs as the translation engine.
- Migration Defense Intelligence Threat Data System: Complete, integrate and test the threat summary, warning server and local-hire database components. Develop and test the collection interface elements. Conduct the military utility assessments of components.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Precision Targeting Identification: Deploy the production Advanced Target Detection system in the fleet. Transition the re-configurable optical station ( part of the C-130 OSSCAR RO/RO ) into an acquisition program for Naval Intelligence. Initiate prototype C-130 OSSCAR RO/RO C4ISR deployment system design. Integrate the ROSETTA Communication Gateway with the PTI track correlation processor. Complete design and fabrication of the P-3 PTI system. Complete LADAR Level II design package for the Tornado fighter aircraft. Complete evaluation of the PTI LADAR system. Initiate multi-year cooperative program with Ministry of Defense, United Kingdom on integration test and evaluation of the fighter-based LADAR for target ID.
- Space Based Space Surveillance Operations (SBSSO): Conclude formal demonstration and complete transition plan for contributing sensor operations for the SSN to Air Force Space Command.
- Theater Precision Strike Operations (TPSO): Conduct the unreinforced scenario assessment, the second of three user demonstrations in conjunction with U.S. Forces Korea Ulchi Focus Lens Exercise.
- Unattended Ground Sensors (UGS): Commence interim capability period. Initiate transition to acquisition program. Refurbish sensors for use in exercises and operations. Perform additional communications development.

FY 1999 Starts:

- Battle Damage Assessment (BDA) in Joint Targeting Toolbox (BDA in JTT): Conduct a demonstration, in the context of a coalition command post exercise, of the integrated message gateway. Data replication mechanism development and testing will continue throughout this year.
- Coherent Analytical Computing Environment (CACE): Expand the shared data environment to include operational, logistics, manpower and training data with automated data collection/entry and cross-functional reporting and analysis capability. Initiate reasoners/intelligent agents in proof-of-concept squadrons, enabling cognitive readiness within a CACE. Provide Joint Strike Fighter Program Office impact assessment.
- Common Spectral MASINT Exploitation Capability (COSMEC): Demonstrate the utility of spectral data with operational assets. COSMEC ground station will be implemented in USEUCOM, as well as the support of tactical airborne sensors. Release software version 1.3.2. Implement system at USSOUTHCOM and conduct a demonstration at USEUCOM.
- Compact Environmental Anomaly Sensor II (CEASE II): Complete system integration on critical satellite systems and conduct system launch.
- Force Medical Protection Chemical/Biological Dosimeter: Conduct Phase I field evaluations. Conduct technical evaluation of Phase II sampler. Conduct utility assessment at the CINC level.
- Human Intelligence and Counterintelligence Support Tools: Model and evaluate collection tools. Procure and evaluate additional dissemination tools. Conduct single echelon user tests.
- Joint Medical Operations - Telemedicine (JMO-T): Finalize requirements for standard tactics, techniques, and procedures for JMO-T employment forward of the theater hospital. Continue demonstrations of integrated JMO-T capability; assess utility of all JMO-T technologies; prepare for leave behind/residual period.
- Joint Theater Logistics (JTL): Develop computer-assisted capabilities to evaluate operational and logistic tasks. Develop the capability to calculate support unit requirements and sustainment and identify matching sources to meet operational missions. Track the execution of unit sourcing and sustainment through

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- unit closure and dissemination through the theater. Develop collaborative operational and logistics command and control capability.
- Personnel Recovery (PR) Mission Software: Conduct system integration and fielding: Participate in the PACOM Northern Edge exercise. Conduct CENTCOM integration.
- Small Unit Logistics (SUL): Continue system integration to include tactical distribution. Deploy the web-based system in a joint exercise showing interoperable material readiness on the tactical battlefield. Assess performance in replacing tactical footprint and inventory with speed and information. End the ACTD.
- Theater Air Missile Defense Interoperability (TAMDI): Demonstrate the ability to pass target track information to a PATRIOT weapons system to initiate an intercept (launch weapon) in advance of the PATRIOT radar detecting and tracking the target.

FY 2000 Starts:

- CINC 21: Demonstrate large screen visual presentation of situation. Identify and integrate critical decision points, processes, information requirements/relevance, and visual rendering.
- Coalition Aerial Surveillance and Reconnaissance (CAESAR): Over the next decade France, Italy, Canada, Norway, and the United Kingdom (UK) will deploy Ground Moving Target Indicator ground surveillance radar (GMTI), Synthetic Aperture Radar (SAR) platforms and/or their processing systems. The CAESAR ACTD will maximize the military utility of these scarce and expensive resources through the demonstration of interoperability among these assets. Using a combination of simulation and live-fly exercises, CAESAR will develop Concepts of Operations and tactics, techniques and procedures (TTPs) for coalition employment of MTI and SAR operations. CAESAR will correlate the products and provide interoperability among the MTI and SAR assets of the U.S. and these NATO partners.
- Communication/Navigation Outage Forecasting (CNOFS): Confirm launch opportunities for space-based package. Begin fabrication process of space-based sensor.
- Computerized Operational MASINT Weather (COMWx): Provide near-real-time cloud pictures for high-value targeting support, utilizing existing National assets. Provide a foundation to exploit future systems. Increase battlespace situation awareness to support use of precision guided munitions, strike warfare, fleet defense, air refueling and reconnaissance.
- Content-Based Information Security (CBIS): Conduct multi-level security demonstration with Canadian forces using interim software encryption.
- Ground-To-Air Passive Surveillance (GAPS): Conduct Caribbean Assessment for availability of illumination and CONOPS analysis. Complete and Validate Simulation and Modeling tools for use in other Theater Scenarios. Working as an IPT with the users, operational scenarios will be defined and modeled will be used a suite of tools available from Industry. Models and simulation will be used to ensure that the operational concepts and the resulting system specifications are well understood prior to system integration.
- Joint Intelligence, Surveillance and Reconnaissance (JISR): Refine functional user requirements. Design system architecture. Identify and evaluate candidate technologies and software.
- Multiple Link Antenna System (MLAS): Complete antenna component design and fabrication. Conduct component lab tests. Initiate systems engineering

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

efforts leading to antenna configuration demonstrations and field tests.

- **Quick Bolt:** Integrate a subset of the components of the functional assessment approach. These components include data retrieval, filtering and indexing; target and target system models; and their functional aggregation. Review and validation will be done by JCS/J2-T, 497<sup>th</sup> Inspector General and the Joint Targeting Tools Users' Group Beta test.
- **Restoration of Operations (RestOps):** Complete development of site baseline exercise scenario. Conduct Joint Chemical Field Trials and CONOPS development and validation. Develop methodologies to assess technology, chemical field trials, and operational capability for use during RestOps and other fixed-site programs.
- **Tri-Band Antenna Signal Combiner:** Integrate tri-band antenna signal combiner from existing hardware and designs. Begin development of associated mission planning software to maximize data throughput while minimizing antenna weight and volume.

(U) **FY 2001 Plans:** Continue the process of transitioning and initiating ACTDs. Numerous demonstrations will be conducted for those ACTDs initiated in previous years. All FY 1995 and 1996 ACTDs should end. The demonstration phases of the FY 1997 and FY 1998 ACTDs should be completed. Funding will continue for active ACTDs initiated in FY 1996, 1997, 1998, 1999 and 2000 (\$102.660 million total for all prior year ACTDs) that have not been completed or transitioned to acquisition programs. Funding available for initiating new FY 2001 ACTDs, after subtracting for previous years ACTDs, will be approximately \$13.765 million. (\$116.425 million).

(U) Other significant plans for FY 2001 are:

FY 1995 Starts:

- **Precision SIGINT Targeting System:** Conclude the interim capability period and end the ACTD.

FY 1996 Starts:

- **Air Base/Port Biological Detection:** Continue residual maintenance of detector networks, provide depot repairs and spares, initiate upgrade of sampling system and maintain ongoing operator training at four sites in two theaters. Provide data and findings for EMD of ACTD elements. Continue the interim capability period.
- **Joint Logistics:** Continue transition of JL ACTD products to GCSS through the Advanced Information Technology Services (AITS) Joint Program Office (JPO) within the Defense Information Systems Agency (DISA). Conclude the interim capability period and end the ACTD.
- **Navigation Warfare:** Conclude the interim capability period and end the ACTD.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**FY 1997 Starts:**

- Counterproliferation II: Evaluate Conventional Air-Launched Cruise Missile (CALCM) with Advanced Unitary Penetrator (AUP) against surrogate hard chemical facility. Complete integrated munitions effectiveness assessment tools and perform end-to-end validation for the CP II demonstrations. Complete weaponization and qualification.
- Extending the Littoral Battlespace: Conduct MSD II in second quarter FY 2001, followed by a rapid military utility assessment and potential transition to acquisition of accepted residual systems.
- Information Operations Planning Tool: Continue residual support and finalize transition plans. IOPT will support CENTCOM in INTERNAL LOOK 2001, CENTAF in Blue Flag 2001-1, and participate in EFX 2001. Provide IOPT capability to other IO related programs in various services. Conclude the interim capability period and end the ACTD.
- Integrated Collection Management: Develop additional interfaces to collection platforms, collection nodes and data sources. Further enhance and refine software. Develop systems integration and enhancements to processes in response to tactical feedback. Conduct final military utility assessment demonstration, deliver residual interim capability to JFCOM and begin transition of technology for acquisition.
- Joint Advanced Health and Usage Monitoring System: Complete technology module installation on squadron aircraft and crew training. Conduct the operational demonstration. Conduct maintenance re-engineering assessment and health and usage monitoring system (HUMS) technology assessment and cost/benefit analysis. Conclude interim capability support and end the ACTD.
- Military Operations in Urban Terrain: Refurbish CD equipment and commence interim capability period. Conduct extended user evaluations. Provide user evaluation information to appropriate combat and materiel development communities.
- Rapid Terrain Visualization: Complete integration and testing of high-resolution elevation data collection capability on the DHC-7 aircraft. Demonstrate integrated end-to-end RTV process. Acquire and process digital terrain data using DHC-7 collection platform and commercial satellite sources in direct support of XVIII Airborne Corps WFXs. Complete upgrade of workstations and software to objective capability in the IEC and XVIII Airborne Corps and evaluate in a WFX. Extend upgrades and capabilities to topographic units within III Corps. End the ACTD.

**FY 1998 Starts**

- Adaptive Course of Action: Continue multiple CINC, coalition and inter-agency level software integration. Demonstrate military utility of the complete ACOA system during a joint exercise in the December 2000. Complete integration, hardening and transition into GCCS with delivery of the final version of ACOA in the April 2001. Delivered system will include improved versions of Web Planner, Odyssey, LEIF, the Campaign Object server, Geospatial Force Planning Tool, Virtual Books, Intelligent Process Management, Facilitate.com, MASH, and applications to monitor plan execution, and interface with modeling and simulation products. Begin interim capability maintenance and sustainment phase.
- C4I for Coalition Warfare: Conduct a major demonstration, involving the United States, United Kingdom, France, Germany, Italy and Canada, of the coalition interoperability gained with ACTD message formatting and database replication. This will be in the form of a Command Post Exercise. The developed capability will be fully integrated into the Maneuver Control System (MCS) for fielding during FYs 2001/2002. A decision will be made on the

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

wider integration of capability into other Army Battle Command System (ABCS) systems. An initial test of passing coalition ground force data to other Service's systems is also projected.

- Information Assurance: Automated Intrusion Detection Environment: Upgrades for new versions of existing sensors and all software licensing and hardware maintenance will be installed and maintained.
- Joint Biological Remote Early Warning System: Provide remote detection and warning of biological agents for a Brigade-size assembly area to be installed and supported in theater.
- Joint Continuous Strike Environment: Install and support residual software with Service fire support systems and GCCS. Provide capabilities to other programs, e.g., Extending the Littoral Battlespace and Theater Precision Strike Operations ACTDs. Participate in at least one joint and combined exercise, e.g., Ulchi Focused Lens.
- Line-of-Site Anti-Tank: Complete two early risk reduction missile flight tests utilizing residual IMU and guidance electronics hardware from the FY 1999 verification tests and a fire unit structurally representative of the final design. Complete fire unit and missile assembly designs and conduct final program design review. Begin integration of fire unit, including the integration of weapon system software. Missile software integration will be completed and hardware integration will be initiated.
- Link-16: Conclude interim capability period and end the ACTD.
- Migration Defense Intelligence Threat Data System: Evaluate the deployable server and threat vulnerability correlator. All ACTD elements will be integrated and the interim capability phase begun with support to EUCOM.
- Precision Target Identification: Conduct laboratory aircraft test and operational deployment of the complete PTI system. Flight test and evaluate the Tornado fighter based LADAR system. Flight test and evaluate the production re-configurable optical station. End the ACTD.
- Space Based Space Surveillance Operations (SBSSO): Conclude interim capability period and end the ACTD. Initiate post-SBSSO ACTD contributing sensor operations to Air Force Space Command.
- Theater Precision Strike Operations (TPSO): Conduct the Transition to Reinforcement assessment, the third in series of user demonstrations/evaluations.
- Unattended Ground Sensors (UGS): Complete transition to acquisition. Release request for proposal for full-scale acquisition contract. Conclude interim capability period and end the ACTD.

**FY 1999 Starts**

- Battle Damage Assessment (BDA) in Joint Targeting Toolbox: Integrate additional components. Include comparison of combat objectives with actual results and BDA report generation. A military utility assessment will be conducted in a CENTCOM joint exercise.
- Coherent Analytical Computing Environment: Prototype the immersive user interfaces to augment reality and increase the utility of operators basic computer skills, thereby reducing training requirements. Integrate reasoners/intelligent agents for functions such as forecasting and automated notification/broadcasting. Provide CACE architecture to USMC aviation community. Update Joint Strike Fighter Program Office impact assessment.
- Common Spectral MASINT Exploitation: Commence maintenance and sustainment of a COSMEC interim capability.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Compact Environmental Anomaly Sensor II: Demonstrate mission support.
- Force Medical Protection Chemical/Biological Dosimeter: Demonstrate real-time chemical sampler with biological agent collection capabilities. Complete field evaluation of Phase II sampler. Transition system to the CINC level.
- Human Intelligence (HUMINT) and Counterintelligence (CI) Support Tools: Assess CONOPS, equipment and architecture in Joint Warfighting exercise. Conduct OCONUS real-world military utility assessment and operational evaluation.
- Joint Medical Operations – Telemedicine: Complete capstone military utility assessment and transition interim capability for the CINC or designated component surgeon.
- Joint Theater Logistics: Expand capability to integrate in-theater distribution support planning and infrastructure assessment. Incorporate plan deviation detection technology and sentinels to compare planned and actual resource consumption. Forecast and assess the impact of deviations and alternative support concepts upon future operations. Conduct a military utility assessment.
- Personnel Recovery Mission Software: Complete integration and conduct CENTCOM exercise. Initiate transition activity.
- Theater Air Missile Defense Interoperability: Conduct user assessment of the AEGIS/PATRIOT integrated air picture capability. Collect THAAD/CEC integration data and prepare integration approach and concept.

FY 2000 Starts:

- CINC 21: Complete CINC-shared visualization and distributed decision making demonstration.
- Coalition Aerial Surveillance and Reconnaissance: Participate in a live-fly exercise and evaluate the interchange format, registration algorithms, and Moving Target Indicator (MTI) association, correlation and tracking algorithms. Continue development and integration of MTI-Synthetic Aperture Radar (SAR) cueing algorithms, the MTI-SAR Common Operational Picture, and mission planning and tasking tools.
- Communication/Navigation Outage Forecasting: Integrate and test space-based sensor package in space-chamber environment. Prepare package for integration onto launch platform.
- Computerized Operational MASINT Weather: Demonstrate algorithms to exploit Computerized Operational MASINT Weather products at theater level.
- Content-Based Information Security: Commence technical integration at Naval Space Warfare Systems Center's Network Technology Integration Laboratory using the hardware crypto card.
- Ground-To-Air Passive Surveillance: Complete Specifications and initiate fabrication of 2-D tracking system for Counter Drug operations. Conduct testing on controlled ranges to evaluate Passive detection, 2-D track, and low RCS performance against air platforms. GAPS will participate in at least one exercise (ASCIET or similar exercise as appropriate.) In addition, the units will be deployed to areas of interest to the CINC for initial assessment and training. The users will be trained on the system and participate in real-time inter-operation with the existing command and control functions.
- Joint Intelligence, Surveillance and Reconnaissance: Develop initial capability. Demonstrate and assess capability in Lucky Sentinel exercise.
- Multiple Link Antenna System (MLAS): Continue systems engineering. Complete antenna lab testing. Initiate antenna - platform integration. Commence field testing. Prepare for operational testing and military utility assessment.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

- Quick Bolt: Continue design reviews, system integration, and system testing of the components of the front-end guidance mechanisms.
- Restoration of Operations: Complete Joint chemical field trials and technology assessments. Conduct operational/functional testing. Develop and conduct the Preliminary Demonstration. Refine methodology for operational capability assessment and develop sensor integration software. Initiate planning for technology transition and conduct in-process reviews for the ACTD.
- Tri-Band Antenna Signal Combiner: Complete fabrication of Tri-Band Signal Combiner and perform laboratory and field tests. Complete and test associated mission planning software. Deliver to user (USSOCOM) for field evaluation.

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) ACQUISITION STRATEGY:** Not Applicable

<b>(U) B. Program Change Summary</b>	<b><u>FY1999</u></b>	<b><u>FY2000</u></b>	<b><u>FY2001</u></b>	<b><u>Total Cost</u></b>
Previous President's Budget	88.598	117.969	119.298	Continuing
Appropriated Value		107.969		Continuing
Adjustments to Appropriated Value				
a. Congressionally Directed undistributed reduction	(3.112)			
b. Rescission/Below-threshold Reprogramming, Inflation Adjustment	(5.205)	(.852)	(.852)	
c. Other		(2.141)	(2.021)	Continuing
Current President's Budget	80.281	104.976	116.425	Continuing

**Change Summary Explanation:**

**(U) Funding:** Changes were based on inflation adjustments, Congressionally directed undistributed reductions, below threshold reprogrammings and the government wide rescission.

**(U) Schedule:** Not Applicable

**(U) Technical:** Not Applicable

**(U) C. Other Program Funding Summary Cost :** Not Applicable

**(U) D. Schedule Profile:** Not Applicable

**(U) A: Acquisition strategy:** Not Applicable

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

(U) **E. PE Funding for FY 1995 ACTDs:**

<u>ACTD</u>	<u>FY1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
Advanced Joint Planning*	1.300	0	0
Cruise Missile Defense Phase I*	0	0	0
Joint Countermine**	1.400	.370	0
High Altitude Endurance Unmanned Aerial Vehicle	0	0	0
Kinetic Energy Boost Phase Intercept*	0	0	0
Medium Altitude Endurance Unmanned Aerial Vehicle*	0	0	0
Precision SIGINT Targeting System**	0	0	0
Rapid/Counter Multiple Launcher*	0	0	0
Rapid Force Projection Initiative**	0	0	0
Synthetic Theater of War*	.550	0	0

\*Completed

\*\* Completed the demonstration phase of the ACTD

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

(U) **E. PE Funding for FY 1996 ACTDs**

<b>ACTD</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
Airbase/Port Biological Detection**	1.300	1.300	1.300
Battlefield Awareness and Data Dissemination	2.400	3.500	0
Combat Identification**	2.400	1.600	0
Combat Vehicle Survivability*	0	0	0
Counterproliferation I**	4.980	6.200	0
Counter Sniper*	0	0	0
Joint Logistics	.060	0	0
Joint Readiness Extension to Advanced Joint Planning ***	0	0	0
Low Life Cycle Cost, Medium Lift Helicopter*	0	0	0
Miniature Air Launched Decoy	1.000	.600	0
Navigation Warfare**	.360	0	0
Semi-Automated IMINT Processing**	2.400	0	0
Tactical UAV*	0	0	0
Theater High Energy Laser	0	0	0

\*Completed

\*\* Completed the demonstration phase of the ACTD

\*\*\* Completed and incorporated into the Advanced Joint Planning ACTD

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) E. PE Funding for FY 1997 ACTDs**

<b>ACTD</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
Chemical Add-On to Biological Detection**	0	.600	0
Consequence Management*	0	0	0
Counterproliferation II	4.500	11.700	3.800
Extending the Littoral Battlespace	5.100	6.200	8.300
Information Operations Planning Tool	1.600	1.900	2.500
Integrated Collection Management	1.100	1.900	2.500
Joint Advanced Health and Usage Monitoring System	3.200	4.800	3.600
Military Operations in Urban Terrain	0	0	0
Rapid Terrain Visualization	2.550	3.700	4.800

\* Completed

\*\* Completed the demonstration phase of the ACTD

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) E. PE Funding for FY 1998 ACTDs**

<b>ACTD</b>	<b>FY1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
Adaptive Course of Action	4.300	5.600	2.200
C4I for Coalition Warfare	1.200	2.100	4.500
High Powered Microwave*	.700	0	0
Information Assurance: AIDE	3.000	4.300	3.200
Joint Bio Remote Early Warning System	0	2.500	3.800
Joint Continuous Strike Environment	1.560	2.500	3.200
Joint Modular Lighterage System	4.060	1.200	0
Line-of-Sight Anti-Tank	7.000	3.700	3.800
Link 16	1.250	1.200	3.800
Migration Defense Intelligence Threat Data System	.800	1.000	1.700
Precision Targeting Identification	3.226	3.200	.800
Space Based Space Surveillance Operations	.700	.900	.900
Theater Precision Strike Operations	4.000	5.600	6.400
Unattended Ground Sensors**	1.800	1.900	.700

\* Completed

\*\* Completed the demonstration phase of the ACTD

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) E. PE Funding for FY 1999 ACTDs**

<b>ACTD</b>	<b>FY 1999</b>	<b>FY 2000</b>	<b>FY 2001</b>
Battle Damage Assessment in the Joint Targeting Toolbox	.440	.500	.300
Coherent Analytical Computing Environment	0	.600	.600
Common Spectral MASINT Exploitation Capability	1.000	1.200	1.400
Compact Environment Anomaly Sensor	0	0	.100
Force Medical Protection	.400	.600	.100
Human Intelligence and Counterintelligence Support Tools	.800	1.900	2.200
Joint Medical Operations Telemedicine	1.850	3.000	0
Joint Theater Logistics	1.700	.600	0
Personnel Recovery Mission Software	.695	.900	.600
Small Unit Logistics	1.200	.600	0
Theater Air and Missile Defense Interoperability	2.400	5.000	4.000

**UNCLASSIFIED**

<b>RDT&amp;E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)</b>		Date: February 2000
APPROPRIATION/BUDGET ACTIVITY RDT&E, Defense-wide/BA 3	R-1 ITEM NOMENCLATURE ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS PE 0603750D	

**(U) E. PE Funding for FY 2000 ACTDs**

<b><u>ACTD</u></b>	<b><u>FY 2000</u></b>	<b><u>FY 2001</u></b>
CINC 21	1.700	4.500
Coalition Aerial Surveillance and Reconnaissance	1.106	1.460
Communication/Navigation Outage Forecasting System	.400	1.000
Computerized Operational MASINT Weather	.700	3.100
Content-Based Information Security*	1.300	1.500
Ground-To-Air Passive Surveillance	.300	2.500
Joint Intelligence, Surveillance and Reconnaissance	.800	6.200
Multiple Link Antenna System	1.200	1.900
Quick Bolt	1.000	5.400
Restoration of Operations	1.000	3.300
Tri-Band Antenna Signal Combiner	.500	.700

\* Previously known as Project UMBRELLA