
Weapon Systems
UNITED STATES ARMY 2000
DEPARTMENT OF THE ARMY
UNITED STATES OF AMERICA
1775

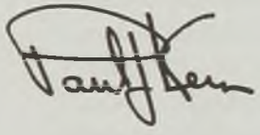
TO THE READER:

In the 21st Century, *The Army* will continue to serve the nation as it has for more than two centuries. Our soldiers will enable America to fulfill its world leadership responsibilities of safeguarding our national interests, and when required, fighting and winning our Nation's wars.

We are committed to provide the soldiers who serve our nation with the materiel required to decisively accomplish their missions anywhere in the world at any time. *The Army* must be deployable, agile, versatile, lethal, survivable and sustainable. By investing in and developing systems that meet this requirement, *The Army* will continue to excel across the broad spectrum of combat and non-combat operations and successfully answer any call to duty.

In order to achieve its Vision, *The Army* has set out to transform itself, moving rapidly toward new concepts and equipment for the 21st Century Army.

This handbook represents the best available equipment for the year 2000 and outlines the major programs to equip the Army of the 21st Century. We hope that you find this book a valuable and informative reference source.



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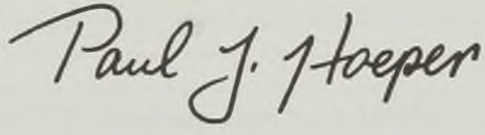

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WEAPON SYSTEMS

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System contributions to the patterns of operation are denoted by highlighted icons. Each system contributes different operational strengths.

The system's **acquisition phase** is highlighted. The terms are explained on the facing page.

The **Prime Contractor(s)** for the system is displayed. The major subcontractors can be found listed in the Appendices.

The **U.S. Outline** highlights the states in which system contractors with ≥ 5% of total program value for FY00 are located.

Advanced Field Artillery Tactical Data System (AFATDS)

Production, Fielding/Deployment and Operational Support

MISSION
Provide automated command, control, and communications system for future fire support systems.

DESCRIPTION AND SPECIFICATIONS
Advanced Field Artillery Tactical Data System (AFATDS) enables the maneuver commander to plan and execute attacks on the right target, at the right time, with the right weapon system and the right munitions. It provides for maximum utilization of the fire support assets available on an expanding battlefield. AFATDS provides the maneuver arms (Army and Marine Corps) automated fire support command, control, and communications portion of the Army Battle Command System (ABCS) and supports the close, deep, and rear-battle fire-support requirements of land and littoral doctrine. AFATDS is designed for full interoperability with the other ABCS battlefield functional areas (BFAs) as well as with the fire support capabilities of the Navy's and Air Force's command and control weapon systems.

AFATDS provides integrated, automated support for planning, coordinating, and controlling all fire-support assets (field artillery, mortars, close air support, naval gunfire, attack helicopter, and offensive electronic warfare) and for executing counterfire, interdiction, and suppression of enemy targets for close and deep operations. AFATDS uses non-developmental, ruggedized, common hardware/software used by the other ABCS BFAs. AFATDS uses the results of its target-value analysis to establish target priorities, select the best weapon system from all fire-support assets available, and coordinate target acquisition and sensor assets to provide targeting information and target damage assessment data.

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FOREIGN COUNTERPART
France: ATLAS; Germany: ADLER; Italy: SIR; Norway: ODIN; United Kingdom: BATES.

FOREIGN MILITARY SALES
The price and availability to sell AFATDS has been issued to Kuwait, Portugal, Saudi Arabia, Taiwan, and Turkey. A purchase order is in process for Portugal.

PROGRAM STATUS
1QFY99 AFATDS '98 limited user test and evaluation (LUTE).
2QFY99 AFATDS '98 Package 11 interoperability test.
September 15, 1999 AFATDS '02/04 contract award.
1QFY00 AFATDS '98 materiel release.

PROJECTED ACTIVITIES
4QFY00 AFATDS '99 technical test readiness review.
4QFY00 AFATDS '99 LUTE.
2QFY01 AFATDS '99 materiel release.

PRIME CONTRACTORS
Software: Raytheon (Fort Wayne, IN)
Hardware: General Dynamics (Taunton, MA)

* See appendix for list of subcontractors

Advanced Field Artillery Tactical Data System (AFATDS)
Information Dominance

UNITED STATES ARMY

WEAPON SYSTEMS 2000

UNITED STATES ARMY

ACQUISITION PHASES

Concept Exploration

This phase typically consists of competitive, parallel short-term concept studies. The focus of these efforts is to define and evaluate the feasibility of alternative concepts and to provide a basis for assessing relative merits of these concepts at the next milestone decision point. Analysis of alternatives are used as appropriate to facilitate comparisons of alternative concepts. The most promising system concepts are defined in terms of initial, broad objectives for cost, schedule, performance, software requirements, opportunities for tradeoffs, overall acquisition strategy and test and evaluation strategy.

Program Definition and Risk Reduction

During this phase, the program is defined as one or more concepts, design approaches, and/or parallel technologies are pursued as warranted. Assessments of the advantages and disadvantages of alternative concepts are refined. Prototyping, demonstrations and early operational assessments are considered and included as necessary to reduce risk so that technology, manufacturing, and support risks are well in hand before the next decision point. Cost drivers, life-cycle cost estimates, cost performance trades, interoperability, and acquisition strategy alternatives are considered to include evolutionary and incremental software development.

Engineering and Manufacturing Development

The primary objectives of this phase are to: translate the most promising design approach into a stable, interoperable, producible, supportable, and cost-effective design; validate the manufacturing or production process; and demonstrate system capabilities through testing. Low-rate initial production (LRIP) occurs while the engineering and manufacturing development phase is still continuing as test results and design fixes or upgrades are incorporated.

Production, Fielding/Deployment, and Operational Support

The objectives of this phase are to achieve an operational capability that satisfies mission needs. Deficiencies encountered in developmental test and evaluation (DT&E) and initial operational test and evaluation (IOTE) are resolved and fixes verified. During fielding/deployment and throughout operational support, the potential for modifications to the fielded/deployed systems continues.

INTRODUCTION: AN ARMY IN TRANSFORMATION

Today's Environment

As the 21st Century dawns, the United States confronts a dynamic and uncertain international environment that poses complex challenges. These include regional instabilities, terrorism, religious and ethnic strife, the proliferation of weapons of mass destruction, and humanitarian crises.

Above all, our military forces must safeguard our national interests by fighting and winning our Nation's wars. They must also enable America to fulfill its global leadership responsibilities—to make the world a safer place. Thus, American military forces must be prepared to engage in varied and often nontraditional tasks, including nation building, peacekeeping and humanitarian assistance.

Supporting National Military Strategy

America's National Military Strategy (NMS) sets forth three key objectives for U.S. military forces:

- Shape the international environment
- Respond to the full spectrum of crises
- Prepare now for an uncertain future

Shaping the international environment is accomplished through deterrence, peacetime engagement activities, and active participation and leadership in alliances. Deterrence rests on a potential adversary's perception of our capabilities and commitment—our ability to bring decisive military power to bear and our communicated willingness to do so.

The U.S. military will be called upon to respond to crises across a full spectrum of operations. Forces will be needed in joint, combined, and multinational formations for a variety of missions, extending from humanitarian assistance and disaster relief to major theater wars (MTWs) that may involve the use of weapons of mass destruction.

The U.S. military must be prepared to confront the challenges of this uncertain future. No matter what the mission, the United States must be able to exercise the military superiority essential to our global leadership.

The Army's Role

The Army plays a critical role in supporting the NMS. Its job is to remain the preeminent land warfighting force in the world, to be capable of prompt and sustained land combat operations. The Army is unique in its ability to put American soldiers on the ground, in harm's way, to reassure friends and allies, and to deter potential aggressors.

And, should deterrence fail, the Army must be prepared to conduct two nearly simultaneous MTWs. The Army also supports the Nation's interests by conducting various humanitarian and peace

operations, such as those in Bosnia and Kosovo. Currently, the Army has 146,000 soldiers stationed or forward deployed in 90 countries around the world.

The Army Vision

The Army will remain critical to the NMS. The vision for the Army of the 21st Century calls for its transformation into a strategically responsive force that is dominant across the entire spectrum of operations. The Army Vision calls for forces that are *responsive*, *deployable*, *agile*, *versatile*, *lethal*, *survivable*, and *sustainable*.

Responsive

The Army will provide strategic responsiveness through forward-deployed forces, forward-positioned capabilities, engagement, and, when called for, force projection from the continental United States or any other location where needed capabilities reside.

Deployable

The Army will enhance its strategic mobility. We will develop the capability to deploy a maneuver brigade anywhere in the world in 96 hours, a full division in 120 hours, and five divisions in 30 days. Over the next year, we will begin to experiment with unit designs and equipment that improve the deployability of our heavy forces and yet provide them with greater staying power than light units.

Agile and Versatile

The Army will transform its units and equipment to become more agile and versatile. This involves the mental and physical agility operationally to move forces from stability and support operations to warfighting and back. We will design into our organizational structures forces which will, with minimal adjustment and in minimum time, generate formations that can dominate at any point on the spectrum of operations. We will also equip and train those organizations for effectiveness in any of the missions that The Army has been asked to perform.

Our platforms will be smaller and lighter, yet lethal and survivable. They will have increased fuel efficiency and reliability. Newly created medium units, incorporating such systems and employing new doctrine, will provide unmatched flexibility to enable them to excel across the spectrum of combat and non-combat operations.

Lethal

Lethality calls for every element in the warfighting formation to be capable of generating combat power and contributing decisively to the fight. We will retain today's light-force deployability while providing it with the lethality and mobility for decisive outcomes that our heavy forces currently have. We will retain heavy-force lethality through overmatch while providing it with deployability and employability in areas currently accessible only by light forces.

As technology allows, we will begin to erase the distinctions between heavy and light forces and we will review our requirement for specialty units and ensure they continue to evolve to meet the needs of the Nation.

Survivable

The Army will develop technology that provides maximum protection to our forces at the individual soldier level, whether mounted or dismounted. Ground and air platforms will leverage the best combination of low observable, ballistic protection, long range acquisition and targeting, early attack, and higher first round hit and kill technologies, using available smaller calibers.

Sustainable

The Army will aggressively reduce its logistics footprint and replenishment demand. This will require controlling the number of vehicles deployed, leveraging reach-back capabilities, and investing in a system-of-systems approach to the weapons and equipment we design. This will revolutionize the manner in which we transport and sustain our people and materiel.

Achieving the Army Vision

Currently, Army forces are not optimally designed and organized to fully support this vision. Our heavy divisions, while effective in a wide variety of combat and non-combat environments, require tremendous resources to deploy and sustain. Our light forces, while more easily deployed and sustained, lack lethality, survivability, and tactical mobility.

In addition, changes in technology, particularly the proliferation of information technologies, have led to changes in the nature of warfare that present new risks and new opportunities. The Army intends to keep pace with changes by incorporating new doctrine, organizational changes and technology required to develop the envisioned new full-spectrum force. To stimulate development of doctrine and organizational design, for example, we are examining options for "off-the-shelf" equipment and will stand up our initial units with these systems at Fort Lewis, Washington.

Even as we modernize to achieve the goals of the Army Vision, we must maintain and improve the capability of those existing forces that provide the core of the Army's warfighting capability. These include upgraded variants of fielded equipment, such as the M1A2 System Enhancement Program (SEP) tank and AH-64D Longbow Apache helicopter, along with new systems, such as the Highly Mobile Artillery System (HIMARS) and the Comanche helicopter. These weapon systems integrate critical enhancements in command and control, such as Force XXI Battle Command Brigade and Below, that will help to ensure combat overmatch for Army forces well into the 21st Century.

We will continue to develop technologies that will provide the foundation for the Objective Force. That force will feature equipment of unmatched capability, including the Future Combat System (FCS). It will benefit from the organizational and doctrinal lessons we learn in the coming years. The result will be an Army that can respond rapidly and effectively, whatever the mission, to support and defend our Nation's interests.

Investing in the Future Army

While the Army of the future may look radically different from that of today, certain fundamental capabilities will remain. We will continue to focus our investments in weapons, supporting systems, and associated technologies that support such capabilities. These investments consist of the following five components.

Information Dominance

First and foremost, our forces must maintain a degree of information dominance that enables them to use information systems to achieve an operational advantage, while denying that capability to any adversary. Such systems provide battlefield visualization, situational awareness, combat identification, spectrum supremacy, and command and control attack and protection.

Critical elements of the digital command and control architecture include the Advanced Field Artillery Tactical Data System (AFATDS), the Forward Area Air Defense Command, Control and Intelligence System (FAADC2I), the Maneuver Control System (MCS) and the All Source Analysis System (ASAS). These systems and others form the Army Battle Command System (ABCS), a complex system-of-systems that enables commanders and their staffs to monitor the tactical battlefield and plan future operations.

Systems that contribute to achieving knowledge-based battlespace awareness include the Comanche and the Tactical Unmanned Aerial Vehicle (TUAV). Networked in a digital environment, the synergy of these systems provides warfighters with a quantum advantage in information gathering and distribution.

Overmatch

Second, the Army must maintain advanced combat systems that create a disparity between friendly and enemy forces. Such an inherent superiority—known as combat overmatch—endows Army forces with an operational advantage over potential adversaries. The speed, firepower, and survivability of M1A2 SEP tanks and M2A3 Bradley Fighting Vehicles provide The Army with superior agility and lethality in high-intensity combat.

The Crusader advanced field artillery system restores combat overmatch in cannon artillery to the United States. Its speed and responsiveness unleash unprecedented maneuver power, creating a fire support force that operates habitually within the decision cycle of any future adversary.

The Patriot Advanced Capability-3 (PAC-3) system upgrade, along with the PAC-3 missile, provides an advanced anti-tactical missile capability to the current fielded systems. Other systems, such as HIMARS, and the Brilliant Anti Armor Submunition (BAT) greatly heighten the ability of early-entry forces to fight and survive across the full range of operational environments.

Essential Research and Development

Third, we must invest in essential research and development programs that provide the foundation for success in future conflicts. Investment in promising technologies today will ensure an Army that can be effective across the full range of operations that it is likely to face tomorrow.

For example, the Line-of-Sight Anti-Tank (LOSAT) missile and the Theater High Altitude Area Defense (THAAD) system incorporate key leap-ahead technologies. As the Future Combat System develops, it too will incorporate revolutionary technologies to ensure land force dominance in the 21st Century. Army combat forces must be capable of rapid unit deployments, both for early entry and follow-on forces, with full combat capability. The Future Combat Systems—a system of systems family of combat systems—

are the central element in the architecture for the Objective Force, providing that dominant land force from FY2012-on. FCS will provide lethality and survivability overmatch equivalent to the current force, with global deployability in C-130 class aircraft. FCS concept development over the next two years will examine the spectrum of available technologies, emphasizing standoff engagement, and select cost-effective combinations for advanced technology demonstration leading to engineering and manufacturing development in FY06.

Recapitalization

Fourth, we must continue to maintain and upgrade current systems. The goal of such investment, or recapitalization, is to reduce the ownership costs of existing systems and to extend their useful life. For example, the Army is expanding its recapitalization efforts to provide a new engine for Abrams tanks, which will drastically reduce fuel consumption and increase reliability. The current plan also includes replacement of obsolescent electronics on board, which will not only extend their useful life, but also endow the platform with enhanced effectiveness and capability.

The CH-47F Chinook/Improved Cargo Helicopter and the Heavy Equipment Transporter allow similar cost-effective capability enhancements, while reducing future operations and support (O&S) costs. These investments help to ensure that American soldiers always use safe equipment.

The Army's recapitalization efforts also focus significantly on leveraging industry's successes in technology improvements that can bolster capabilities of existing equipment as well as future systems. For example, the Army is working closely with industry in evaluating emerging breakthrough automotive technologies that can be incorporated into future truck recapitalization programs.

Contributing Capabilities

Finally, we will invest wisely in the many contributing capabilities that comprise remaining Army programs. These provide critical support capabilities to Army forces across the wide-range of operations. For example, trained soldiers are the cornerstone of victory, and the Army is investing in models and simulators to ensure that soldiers are trained and ready to fight.

These investment components form the framework upon which the Army modernization strategy is planned and executed. Each chapter in *Army Weapon Systems 2000* focuses on one of these investment components and the component is described in greater detail at the beginning of the relevant chapter.

Conclusion

America's Army is transforming itself into a force with heightened strategic responsiveness. At the same time, it is working to maintain dominance across the full spectrum of operations. *Army Weapon Systems 2000* describes the investments being made today to ensure the future readiness of our Army. The Army of tomorrow, and the trained and committed soldiers that fill its ranks, will rely on these systems as they support and defend our Nation and its global interests in the 21st Century.

Information Dominance

Success in future operational environments will hinge on the timely and effective manipulation of information. Commanders must have a clear understanding of the disposition and actions of both friendly and enemy forces to effectively utilize the resources available to them. Such an understanding increases the ability of friendly forces to seize and maintain the initiative, and imparts greater lethality and survivability. Concurrently, they must conduct information operations to disrupt enemy intelligence gathering activities and prevent the enemy from exercising effective command and control.

Information Dominance is the degree of information superiority that enables Army forces to use information systems and capabilities to achieve an operational advantage, while denying those capabilities to an adversary. Such superiority results in a disparity between the battlespace awareness of friendly and enemy commanders across the tactical, operational, and strategic levels of operations. Information Dominance derives from the employment of key systems that provide superior capabilities for battlefield visualization, situational awareness, spectrum supremacy, and C2 attack and protection.

Ensuring Information Dominance requires substantial investment in systems and technologies that support the "mental agility" of Army forces. These systems will enhance our ability to collect and process data, identify critical information, and disseminate that information in an uninterrupted flow to the appropriate combat, combat support, and combat service support forces. Intelligence and sensor systems such as the Guardrail/Common Sensor (GR/CS), Tactical Unmanned Aerial Vehicle (TUAV), and others will gather the information needed to provide a clear understanding of the battlefield. Computer hardware and software systems, including the Advanced Field Artillery Data System, the All Source Analysis System, and the Army Data Distribution System, will process that raw data into usable products. Those products will then be rapidly and securely disseminated by an advanced communications architecture that includes the Single Channel Ground Air Radio System (SINCGARS), Warfighter Information Network–Terrestrial (WIN-T) Switches, Military Satellite Communications (MILSATCOM), and others.

Information Dominance is the highest-priority investment component. The Army modernization strategy seeks to field the capabilities throughout the force that would provide for Information Dominance by 2009. In the interim, the objective is to equip a digitized division by FY00 and a digitized corps by FY04.

CONCEPT EXPLORATION

- Advanced Night Vision Goggles ATD
- Air/Land Enhanced Reconnaissance and Targeting (ALERT) ATD
- Anti-personnel Landmine Alternative Program
- Battlespace Command and Control ATD
- Command Post XXI ATD
- Integrated Situation Awareness and Targeting ATD
- Logisitics Command and Control ATD
- Military Operations in Urban Terrain ACTD
- Multi-functional On-the-move Secure Adaptive Integrated Communications ATD
- Multi-function Staring Sensor Suite ATD
- Multi-mission Common Modular Unmanned Aerial Vehicle Sensor ATD
- Rapid Terrain Visualization ACTD
- Tactical Command and Control Project ATD
- Theater Precision Strike Operations ACTD

PROGRAM DEFINITION AND RISK REDUCTION

- Comanche
- Prophet

ENGINEERING AND MANUFACTURING DEVELOPMENT

- Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS)
- Army Airborne Command and Control System (A2C2S)
- Battlefield Combat Identification System (BCIS)
- Combat Identification for the Dismounted Soldier (CIDDS)
- Command and Control Vehicle (C2V)
- Firefinder (AN/TPQ-47)
- Force XXI Battle Command Brigade-and-Below (FBCB2)
- Global Command and Control System-Army (GCCS-A)
- Integrated System Control (ISYSCON)
- Joint Biological Point Detection System (JBPDS)
- Joint Chemical Agent Detector (JCAD)
- Joint Service Lightweight NBC Reconnaissance System (JSLNBCRS)
- Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
- Joint Surveillance Target Attack Radar System (Joint STARS) Common Ground Station (CGS)
- Maneuver Control System (MCS)
- Profiler
- Suite of Integrated Radio Frequency Countermeasures (SIRFC)-AN/ALQ-211
- Tactical Exploitation System (TES)
- Tactical Simulation Interface Unit (TSIU) (WRAP Initiative)
- Tactical Unmanned Aerial Vehicle (TUAV)

PRODUCTION, FIELDING/DEPLOYMENT, AND OPERATIONAL SUPPORT

- Advanced Field Artillery Tactical Data System (AFATDS)
- Airborne Reconnaissance Low (ARL)
- Air/Missile Defense Planning and Control System (AMDPCS)(WRAP Candidate)
- All Source Analysis System (ASAS)
- Army Data Distribution System (ADDS)-EPLRS/NTDRS
- Army Data Distribution System (ADDS)-JTIDS/MIDS
- Army Key Management System (AKMS)
- Automatic Chemical Agent Detector/Alarm (ACADA)
- Combat Service Support Control System (CSSCS)
- Common Hardware Systems (CHS)
- Digital Topographic Support System (DTSS) (WRAP Candidate)
- Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
- Forward Area Air Defense Command, Control and Intelligence (FAADC2I)
- Global Positioning System (GPS)
- Grenadier Beyond Line-of-Sight Reporting and Targeting (BRAT) (GB) (WRAP Candidate)
- Guardrail/Common Sensor (GR/CS)
- Integrated Meteorological System (IMETS)
- Joint Tactical Ground Station (JTAGS)
- Joint Tactical Terminal (JTT)
- Joint Warning and Reporting Network (JWARN)
- Kiowa Warrior
- Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)
- Military Satellite Communications (MILSATCOM)-EHF
- Military Satellite Communications (MILSATCOM)-UHF/SHF/TACSAT
- Nuclear, Biological and Chemical Reconnaissance System (NBCRS)-Fox
- Sentinel
- Single Channel Ground and Airborne Radio System (SINCGARS)
- Standardized Integrated Command Post (SICPS)
- Tactical Endurance Synthetic Aperture Radar (TESAR)
- Tactical High Speed Data Network (THSDN)
- Tactical Operations Centers (TOCs)
- Tactical Quiet Generators (TQG)
- Thermal Weapon Sight (TWS)
- Warfighter Information Network-Terrestrial (WIN-T) Switches
- Warfighter Information Network-Terrestrial (WIN-T) Tech Insertion

Advanced Field Artillery Tactical Data System (AFATDS)

UNITED STATES ARMY

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PRIME CONTRACTORS
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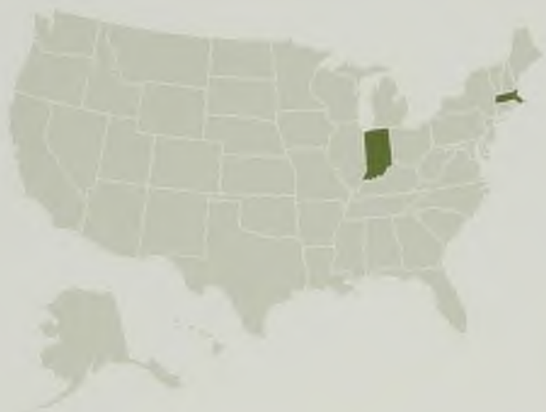
Hardware: General Dynamics (Taunton, MA)



* See appendix for list of subcontractors

Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS)

MISSION
Detect, track, and defeat incoming missiles using airborne countermeasure self-protection system.

DESCRIPTION AND SPECIFICATIONS
The AN/ALQ-212 Advanced Threat Infrared Countermeasures (ATIRCM) is a modular system consisting of the AN/AAR-57 Common Missile Warning System (CMWS), infrared jam head, improved countermeasure dispenser, and improved countermeasure munitions. As a modular system, the ATIRCM can be installed in various configurations: with the CMWS only, to provide missile warning; with the CMWS and the improved countermeasures dispenser; and with the laser and flash-lamp jam head to create a complete system. ATIRCM provides automatic, passive missile detection; threat-type declaration; crew warning; false alarm suppression; and cues to other on-board systems such as dispensers for countermeasure decoys. On the Army version only, the ATIRCM/CMWS adds active, directional countermeasures via a laser and an arc lamp.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None.

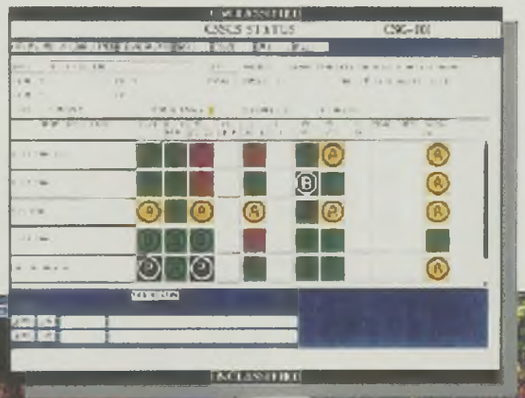
PROGRAM STATUS
Current The ATIRCM is a joint acquisition category integration category program. ATIRCM is undergoing contractor qualification and flight testing as part of the engineering and manufacturing development phase.

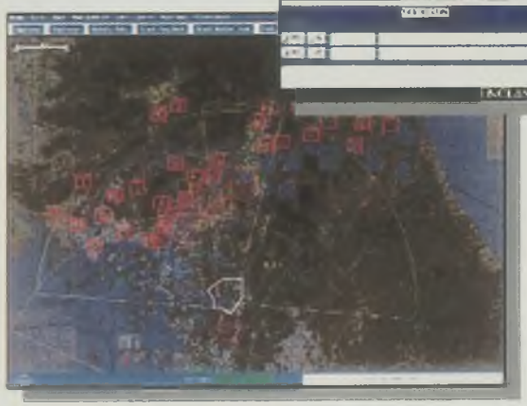
PROJECTED ACTIVITIES
2QFY02 Initiate low-rate production.
2QFY03 Milestone III decision scheduled.
1QFY04 First unit equipped.

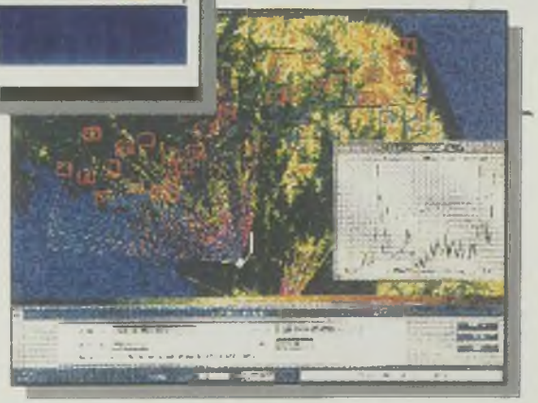
PRIME CONTRACTORS
Lockheed Martin (Nashua, NH)

* See appendix for list of subcontractors

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)







MISSION
As the backbone of air defense, provide Battle Management/ Command, Control, Communications, Computers, and Intelligence (BM/C4I) capability to Air Defense Artillery (ADA) Brigades, the Army Air and Missile Defense Command (AAMDC) corps and echelons above corps headquarters, and joint force command and control elements such as the Battlefield Coordination Detachment (BCD).

DESCRIPTION AND SPECIFICATIONS
The AMDPCS provides ADA Brigades with a fire control system via the Air Defense System Integrator (ADSI) for monitoring and controlling engagement operations by subordinate battalions. The AMDPCS provides a common air and missile defense staff planning and battlespace situational awareness tool via the Air and Missile Defense Workstation (ANDWS) to achieve the common tactical and operational air picture. The AMDWS, like ADSI, will be fielded to air and missile defense units at all echelons of command, battery through theater. The AMDPCS provides the Army Battle Command Systems (ABCS) architecture and the Army Air and Missile Defense Task Forces (AMDTF) with BM/C4I capability and the Army component of interoperable Joint Theater Air and Missile Defense (JTAMD) BM/C4I. The AMDPCS enables Active Passive, and Attack Operations coordination with the joint forces. AMDPCS (Project D169) was initiated with WRAP funding in FY99.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

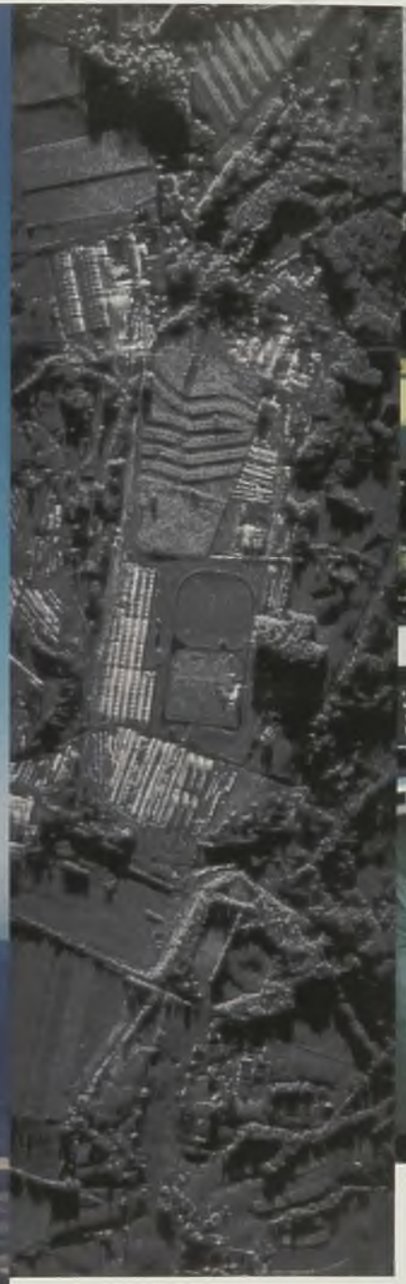
PROGRAM STATUS
3QFY97 Approved operational requirements document.
4QFY97 Approved as acquisition category III program.
FY99 Fieldings to one ADA brigade (partial), AAMDC update, ADA School update.

PROJECTED ACTIVITIES
FY00 Fielding 1 AAMDC Army National Guard (ARNG), 1 ADA brigade
FY01 Fielding 2 ADA brigades retrofit, battlefield coordination detachment (BCD).
FY02 Fielding 2 ADA brigades retrofit.
FY03 Fielding 2 ADA brigades retrofit.

PRIME CONTRACTORS
Brigade FCS: APC (Austin, TX); Brown International (Huntsville, AL)
AMDWS: FAADC2, TRW (Huntsville, AL); Patriot, Intergraph (Huntsville, AL)

* See appendix for list of subcontractors

Airborne Reconnaissance Low (ARL)



MISSION
Detect, locate, and report threat activities, using a variety of imagery, communications intercept, and moving target indicator (MTI) sensor payloads.

DESCRIPTION AND SPECIFICATIONS
The Airborne Reconnaissance Low (ARL) is a multi-function, day/night, all-weather reconnaissance intelligence asset. It consists of a modified DeHavilland DHC-7 fixed-wing aircraft equipped with communications intelligence (COMINT), imagery intelligence (IMINT), and Moving Target Indicator/Synthetic Aperture Radar (MTI/SAR) mission payloads. The payloads are controlled and operated via onboard open-architecture, multi-function workstations. Intelligence collected on the ARL can be analyzed and recorded on the aircraft workstations in real-time or stored on-board for post-mission processing. During multi-aircraft missions, data can be shared between cooperating aircraft via ultra high frequency (UHF) air-to-air data link to allow multi-platform COMINT geolocation operations. The ARL system includes a variety of communications subsystems to support near-real-time dissemination of intelligence and dynamic retasking of the aircraft. There are currently two configurations of the ARL system:

- The ARL-COMINT (ARL-C) configuration with a conventional communications intercept and direction finding (location) payloads
- The ARL-Multifunction (ARL-M) configuration equipped with a combination of IMINT, COMINT, and MTI/SAR payloads

FOREIGN COUNTERPART
Numerous countries possess airborne SIGINT and/or IMINT systems, but none provide the robust multi-intelligence capability of ARL.

FOREIGN MILITARY SALES
None

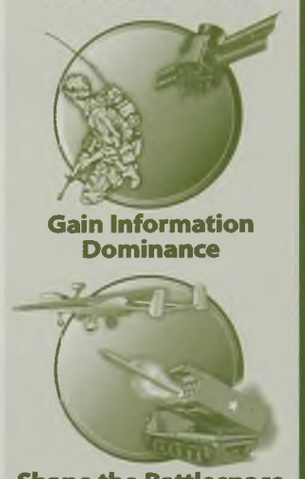
PROGRAM STATUS
Seven ARL systems have been fielded to date.* Two ARL-Cs and one ARL-M are stationed at Ft. Bliss, Texas and primarily support SOUTHCOM requirements; and three ARL-Ms provide support to PACOM (Korea). One ARL-M is currently in production.

*ARL-I crashed in 4QFY99.

PROJECTED ACTIVITIES
- Complete and field ARL-M #5 (Ft. Bliss).
- Upgrade Second Generation Forward Looking Infrared (FLIR).
- Upgrade MTI/SAR performance.

PRIME CONTRACTORS
California Microwave (Belcamp, MD)

* See appendix for list of subcontractors



All Source Analysis System (ASAS)

MISSION
Provide timely, accurate, and comprehensive intelligence of the enemy situation to soldiers and commanders at all echelons.

DESCRIPTION AND SPECIFICATIONS
All Source Analysis System (ASAS) is the intelligence and electronic warfare (IEW) component of the Army Battle Command System (ABCS). ASAS automates IEW asset management, intelligence preparation of the battlefield, and dissemination of intelligence. It supports all echelons and functions in all phases of military operations across the full spectrum of conflict. ASAS supports current operations and future planning.

ASAS receives and correlates information from strategic and tactical intelligence sensors and sources. It automates sensor-to-shooter linkage by providing target nominations directly to the Advanced Field Artillery Tactical Data System (AFATDS). A mission-critical "system of systems," it is built upon the common hardware (CHS-2) platform and is tactically deployable. It operates at compartmented top-secret security levels, fusing signals intelligence (SIGINT), imagery intelligence (IMINT), counter intelligence/human intelligence (CI/HUMINT), measurement and signature intelligence (MASINT), and open sources.

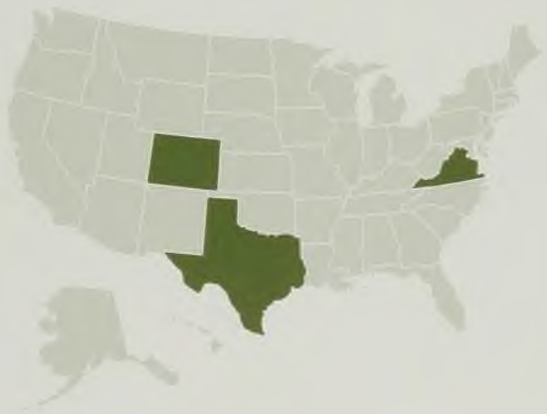
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

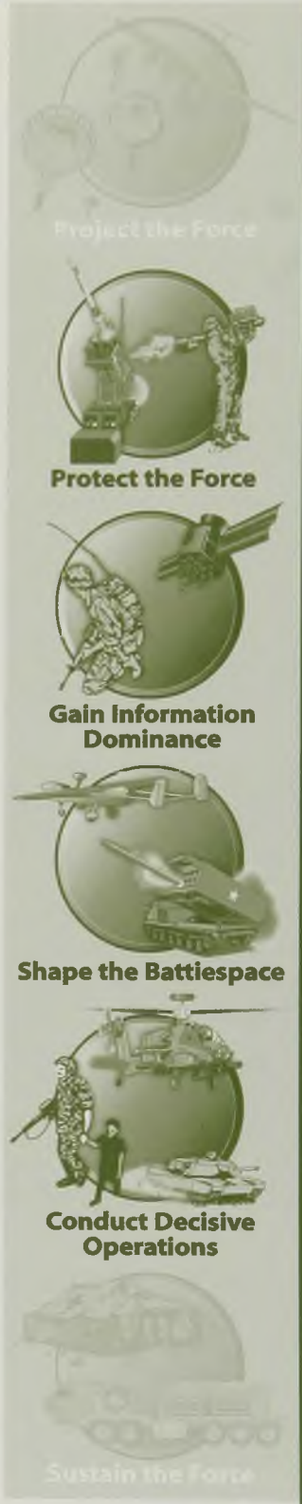
PROGRAM STATUS
- Received milestone III decision for full-rate production and Army-wide fielding of ASAS remote workstation (RWS) Version 4.1.
- Equipped first digitized division with ASAS RWS.
- Achieved Level 6 Defense Information Infrastructure (DII) Common Operating Environment (COE) compliance certification for ASAS RWS.
- Registered 81 DII COE segments of ASAS RWS.
- Integrated and tested ASAS Block II RWS Version 4.1.
- Completed initial operational test and evaluation successfully for Block II ASAS RWS Version 4.
- Type-classified ASAS RWS Version 4 as "standard" (AN/TYQ-93(V)1).
- Significantly enhanced the communications control set (CCS); it is fully Y2K-compliant; added JWICS, Mobile Subscriber Equipment (MSE) tactical internet, and Secret Internet Protocol Router Network (SIPRNET).
- Developed beta version of ASAS Light battalion-level, laptop-configured product.
- ASAS RWS Version 4.1.4 certified Y2K-compliant.
- Completed extended fielding of Block I ASAS to National Guard enhanced readiness brigades; The entire Army now has ASAS Block I.

PROJECTED ACTIVITIES
- Continue fielding ASAS Block II RWS Version 4 system.
- Procure and field CHS-2 hardware as part of Block II.
- Develop, test, and field a deployable ASAS Light (laptop product) for battalion operations.
- Develop and deliver ABCS 6.0 RWS, 6.1 RWS, and 6.2 RWS capabilities.
- Participate in ABCS synchronization event testing.
- Continue to achieve greater joint interoperability.

PRIME CONTRACTORS
Lockheed Martin (Littleton, CO); Electronic Warfare Associates (Herndon, VA)



* See appendix for list of subcontractors



Anti-personnel Landmine Alternative Program

PHOTO NOT AVAILABLE

MISSION
Shape the battlefield and protect forces by enhancing operational and tactical flexibility, and by setting conditions for friendly dominant maneuver; contribute to economy of force operations and provide force multiplier effects against mounted and dismounted forces to degrade enemy capabilities and disrupt enemy maneuvers and operational tempo.

DESCRIPTION AND SPECIFICATIONS
The Anti-personnel Landmine Alternative Program must be able to replace non-self-destruct anti-personnel landmines by 2003 throughout the world, except in Korea. Designed for military forces operating in all environments and terrain across the full spectrum of military operations. The program objective is to field landmine alternatives that are militarily advantageous and cost-effective, yet minimize risks to non-combatants. The system configuration to meet this mission has not been determined. It may be non-lethal or lethal, depending on the outcome of the upcoming competitive evaluation. The goal is to field the system in Korea by 2006.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY00 Evaluated concepts proposed by systems contractors; awarded contract.

PROJECTED ACTIVITIES
Development is ongoing.

PRIME CONTRACTORS
To be determined

Protect the Force

Shape the Battlespace

Army Airborne Command and Control System (A2C2S)

UNITED STATES ARMY

Army Airborne Command and Control System (A2C2S)

Information Dominance

MISSION

Enhance the battle command group's ability to effectively perform combat unit operations; serve as a force multiplier throughout the spectrum of the ever-changing battlefield environment and within the Army's vision of a digitized force.

DESCRIPTION AND SPECIFICATIONS

The Army Airborne Command and Control System (A2C2S) is the Army's only command and control system, supporting corps, division, and brigade commanders with an airborne tactical command post. This mission equipment package will be hosted on UH-60A and L model aircraft. It provides situational awareness and command and control, through the application of the Army Battle Command System (ABCS), incorporating the Maneuver Control System (MCS), All Source Analysis System (ASAS), Advanced Field Artillery Tactical Data System (AFATDS), and the Force XXI Battle Command and Below (FBCB2) components.

This force multiplier system enables non-line-of-sight communications with an unprecedented range and mobility; it enhances the commander's ability to direct, coordinate, and control forces during deep operations and enhanced fire control management with the artillery, Longbow Apaches, Comanches, Kiowa Warriors, and the Joint Surveillance Target Attack Radar Systems (J-STARS). During stability augmentation and support operations, the A2C2S provides connectivity to embassy, law enforcement, maritime, civil, and/or other humanitarian information/communication networks.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

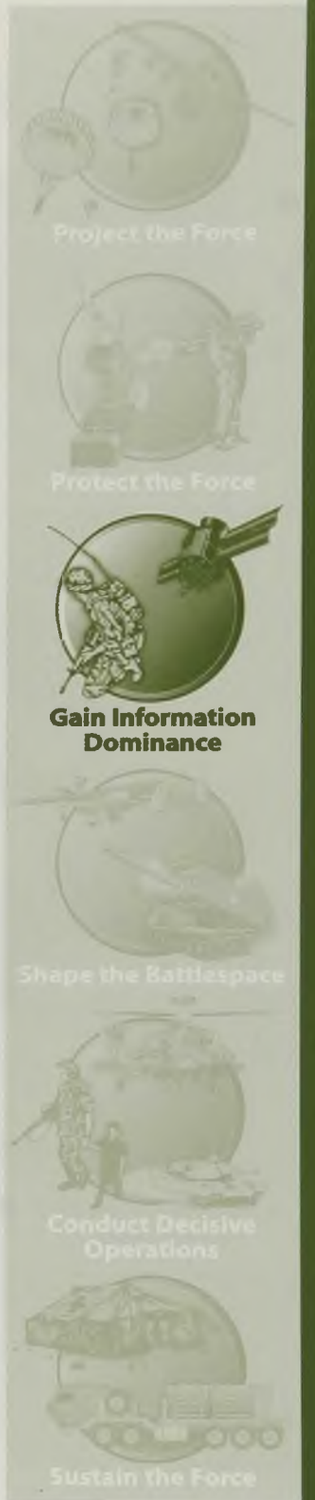
The Army began development of the A2C2S in 1996. Since then, two prototype systems containing federated systems were delivered to the first digitized division at Ft. Hood, TX, for participation in the Task Force XXI Advanced Warfighting Experiment. Its successful performance and proven combat effectiveness resulted in the program's selection to receive Warfighter Rapid Acquisition Program funding.

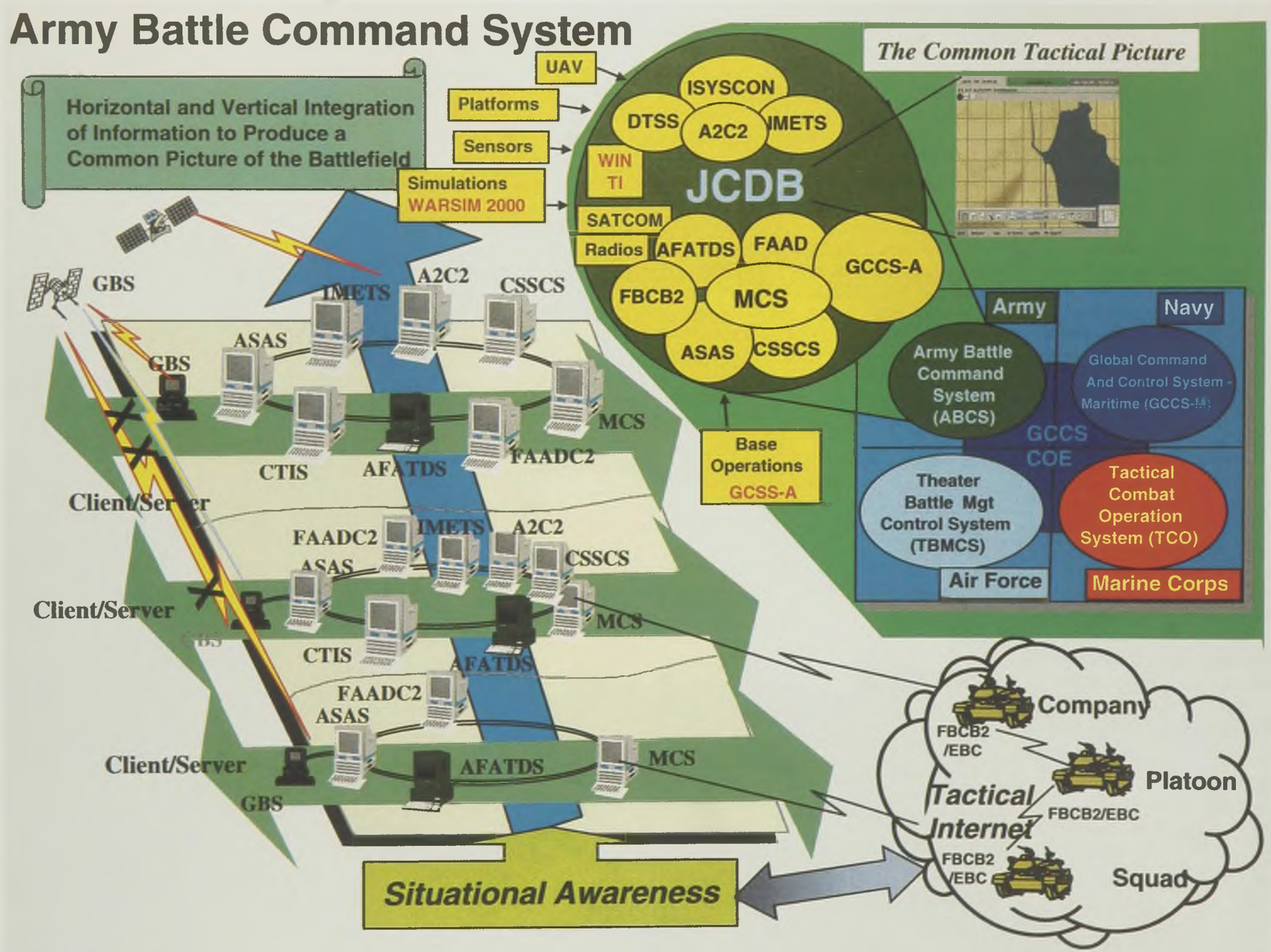
PROJECTED ACTIVITIES

4QFY02 Conduct initial operational test and evaluation.
1QFY03 Milestone III decision scheduled.

PRIME CONTRACTORS

The U.S. Naval Research Laboratory is the A2C2S engineering and manufacturing development objective systems developer and is teamed with Assurance Technology Corporation. The U.S. Army's Aviation Applied Technology Directorate is responsible for the physical integration of the system into the host UH-60 platform. Upon completion of the objective system, the production units will be competed to industry.




Army Battle Command System
Horizontal and Vertical Integration of Information to Produce a Common Picture of the Battlefield
UAV
Platforms
Sensors
Simulations
WARSIM 2000
The Common Tactical Picture
ISYSCON
DTSS
A2C2
IMETS
WIN
TI
JCDB
SATCOM
Radios
AFATDS
FAAD
GCCS-A
FBCB2
MCS
ASAS
CSSCS
Army
Navy
Army Battle Command System (ABCS)
Global Command And Control System - Maritime (GCCS-M)
GCCS COE
Theater Battle Mgt Control System (TBMCS)
Tactical Combat Operation System (TCO)
Air Force
Marine Corps
Base Operations
GCSS-A
GBS
IMETS
A2C2
CSSCS
ASAS
GBS
MCS
CTIS
AFATDS
FAADC2
Client/Server
FAADC2
IMETS
A2C2
ASAS
CSSCS
Client/Server
MCS
CTIS
AFATDS
FAADC2
ASAS
Client/Server
AFATDS
MCS
GBS
Situational Awareness
Company
FBCB2 /EBC
Tactical Internet
Platoon
FBCB2/EBC
FBCB2 /EBC
Squad

MISSION
Link automation assets, communications media, and operational facilities to support commanders and their staffs in collecting and analyzing information, developing plans and orders, and monitoring the tactical battlefield, while simultaneously planning future operations.

DESCRIPTION AND SPECIFICATIONS
Army Battle Command System (ABCS) is the Army's component of the Global Command and Control System (GCCS). It is a complex system of systems that provides the mechanism to receive and transmit information among the joint forces. The ABCS consists of subsystems for the battlefield functional areas (BFAs), each of which supports and provides information to other systems, and provides situational awareness of the battlefield. By integrating the ABCS components through the Joint Common Database (JCDB), the common tactical picture can be viewed at any workstation, to the operator's specific requirements. In addition, ABCS subsystems provide an array of specialized capabilities and applications for commanders of diverse units at all levels. The adjacent table shows the ABCS subsystems and describes their functions.

BFA	ABCS Subsystem	Functionality
Global C2	GCCS-A	Provides access to the Global Command and Control System.
Maneuver	MCS, FBCB2, EBC	Plans, coordinates, and controls current and future operations. Develops situational awareness and the common tactical picture.
Intelligence	ASAS	Develops and provides pictures of enemy situations, from national, theater, and tactical sources.
Fires	AFATDS	Provides automated support for the planning, coordination, control, and execution of close support and deep fires from Army and joint assets.
Topographic services	DTSS	Produces tactical topographic products, including digital and full color paper maps of the battlefield.
Air Defense	FAADC2	Integrates air defense units, sensors, and command and control centers into a system for defeating low-altitude air threat and enables the commander to plan and control the counter-air fight.
Combat Service Support	CSSCS	An automated system for logical, medical, financial, and personnel support to assist decision-making and the battle planning process.
Weather	IMETS	Provides weather information, based on information from Air Weather Service and other sensors.
Airspace management	A2C2	Provides the capability to plan air movements and track aircraft during movement, and to enable deconfliction with weapons systems planning and operations.

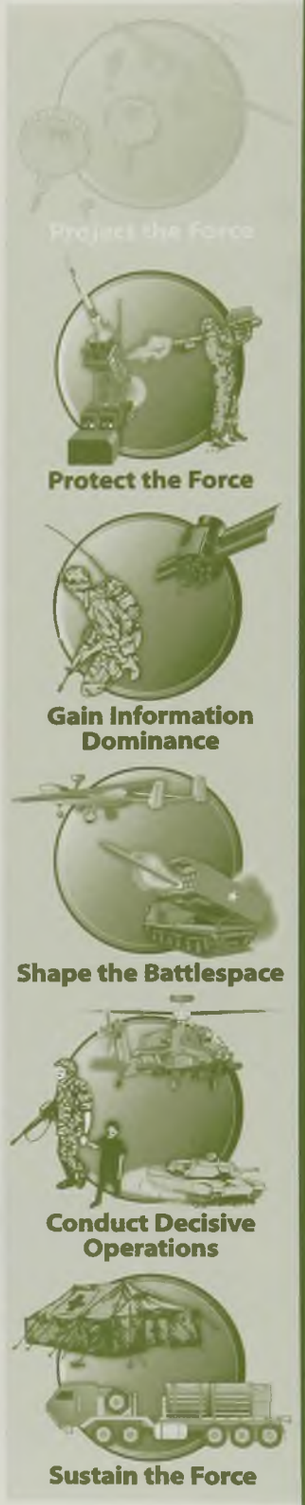
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

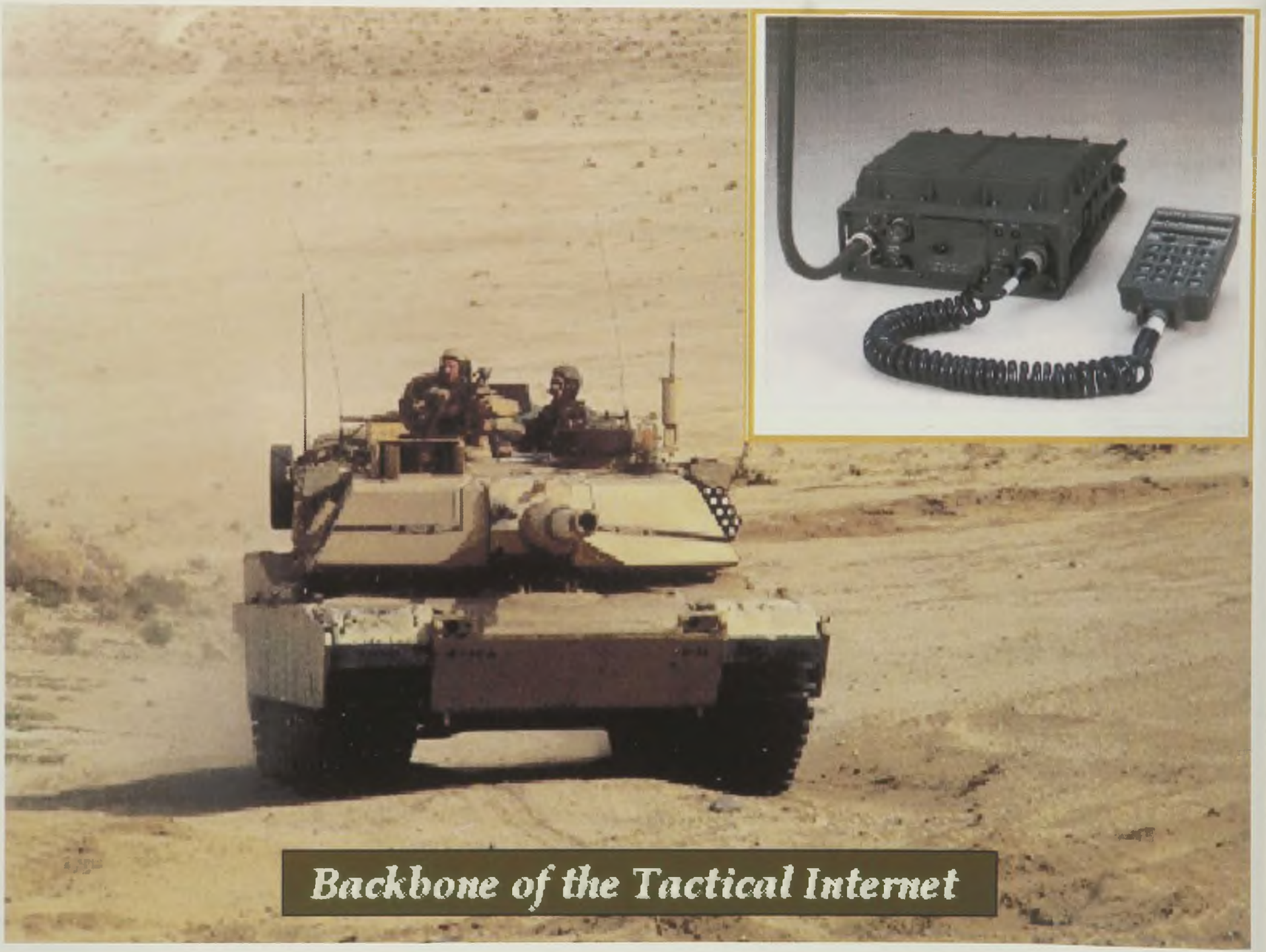
PROGRAM STATUS
ABCS is a system of systems, not a formal program.

PROJECTED ACTIVITIES
Develop the ABCS infrastructure (e.g., JCDB, Command and Control Registry, and ABCS servers). Integrate ABCS subsystems into ABCS Version 5.0, 6.0, and 6.1, etc.

PRIME CONTRACTORS
ABCS is a system of systems, not a formal program.



Army Data Distribution System (ADDS)–EPLRS/NTDRS



MISSION
Provide automated, secure, near-real-time radio communications systems to tactical commanders and staffs; provide data distribution capability between computers, position, location, and navigation reporting of their combat elements.

DESCRIPTION AND SPECIFICATIONS
The Army Data Distribution System (ADDS) program will create the Army communications data backbone from platoon to brigade for Force XXI. The ADDS includes two major products:

Enhanced Position Location Reporting System (EPLRS). The EPLRS provides data distribution and position/navigation services in near-real-time for the warfighter at brigade and below level in support of battlefield functional area (BFA) and Appliqué host computer systems for the Tactical Internet of the Force XXI Battle Command Brigade and Below (FBCB2) program. EPLRS consists of a network control station and EPLRS user units that can be configured as a manpack unit, surface, and an airborne vehicle unit. EPLRS uses a time-division, multiple-access communications architecture to avoid transmission contention with frequency hopping, error detection and correction with interleaving. It uses spread spectrum technology to provide jamming resistance.

Near-Term Digital Radio System (NTDRS). The NTDRS is a largely non-developmental item (NDI) research and development program that fulfills near-term requirements for a higher capacity data network between critical nodes within the tactical internet. The NTDRS provides additional network capacity in the timeframe required for the first digitized division (FDD). The NTDRS will be the primary data hauler between the brigade tactical operation centers (TOCs) and the battalion TOCs, high data rate logistics hosts and all mobile TOCs. It will also help support the Mobile Subscriber Equipment (MSE) Tactical Packet Network (TPN) and EPLRS data networks for the first digitized division. It provides: operation on-the-move in all terrain and foliage, tactical multinet gateway/internet controller interfaces for seamless links with Single Channel Ground and Airborne Radio System (SINCGARS) data, MSE TPN, and EPLRS data nets; compliance with the Joint Technical Architecture–Army; and secret high system operations.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
NTDRS: Canadians have procured 18 radios and the United Kingdom is considering NTDRS for their Bowman Program.

PROGRAM STATUS
EPLRS:

FY99 Congressional plus-up of $15M to procure radios for Army National Guard.

4QFY99 Updated operational requirements document.

MY99/00 Awarded $48.3M production contract for 1,736 radios with options in FY00/01 for Army, Marine Corps, and Navy.

PROJECTED ACTIVITIES
EPLRS:

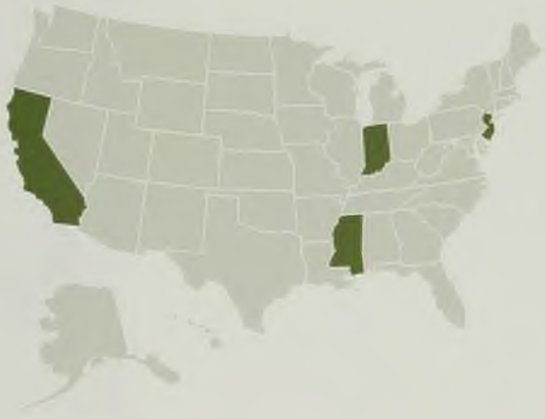
4QFY00 Field to FDD. Participate in the B/A initial operational test and evaluation and FBCB2 limited user test (LUT).

NTDRS:

FY00 Complete design and testing. Perform as the TOC radio.

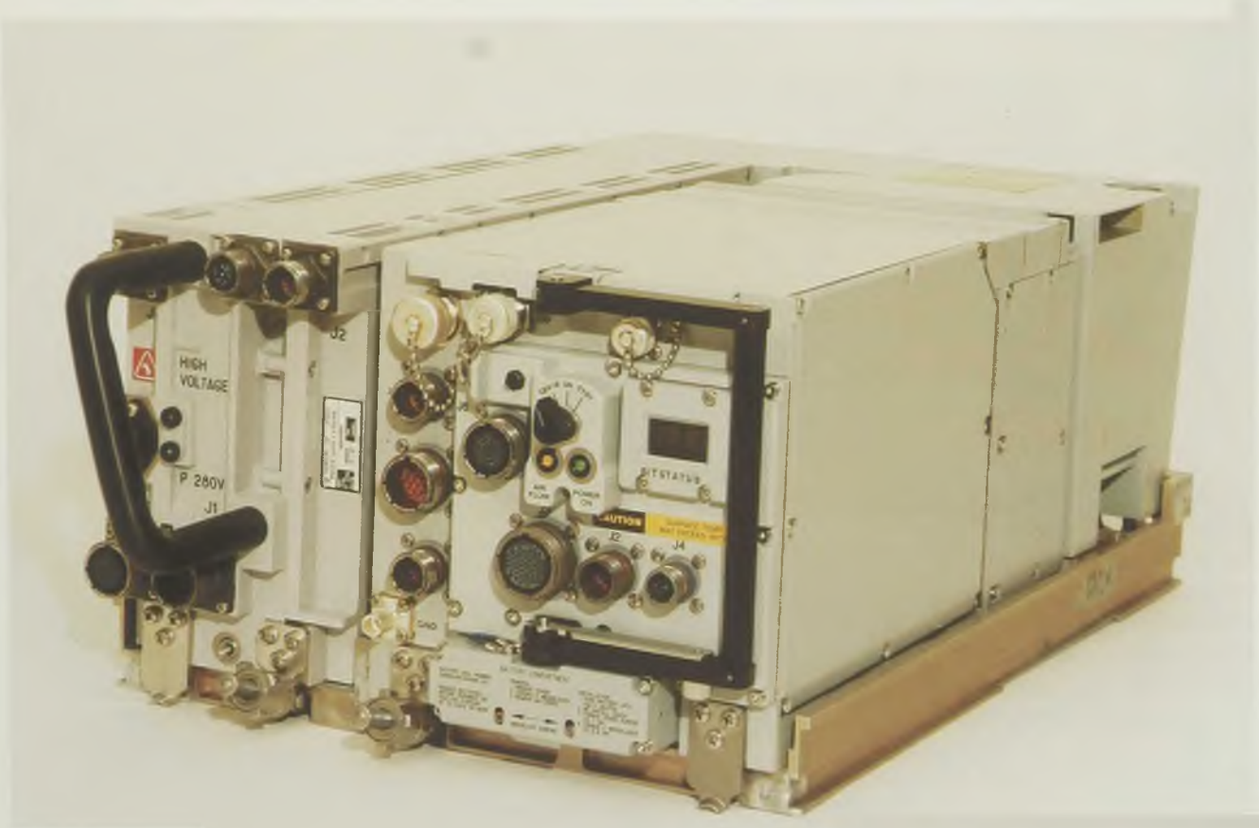
4QFY00 Participate in Joint Chiefs of Staff Advanced Warfighting Experiment and deploy to FDD. Participate in Force XXI Battle Command Brigade and Below force development test and evaluation (FDTE) limited user test 2 and field tests 2 and 3.

PRIME CONTRACTORS
EPLRS: Raytheon (Fullerton, CA; Forrest, MS; Ft. Wayne, IN)
NTDRS: International Telephone and Telegraph (Fort Wayne, IN; Clifton, NJ)



* See appendix for list of subcontractors

Army Data Distribution System (ADDS)–JTIDS/MIDS



JTIDS Terminal

MIDS LVT-2 Terminal

MISSION
Provide an interoperable joint and allied Link-16 tactical digital data link with air, ground, surface, and subsurface platforms; enhance multiservice/North Atlantic Treaty Organization (NATO) interoperability and situational awareness; support Army air and missile defense engagement operations at division, corps, and theater levels.

DESCRIPTION AND SPECIFICATIONS
The Joint Tactical Information Distribution System (JTIDS)/Multifunctional Information Distribution System (MIDS) (LINK-16) is the Department of Defense's primary tactical data link. JTIDS Class 2M and MIDS Low Volume Terminal (LVT) 2 are two generations of the Army's solution for LINK-16 (Tadil-J) connectivity. JTIDS and MIDS utilize time division, multiple access, and frequency hopping with forward error detection and correction. It provides the Tadil-J link for the near-real-time distribution of air and missile tracks, and nets air defense control centers for the control and engagement of air and missile defense operations. JTIDS Class 2M terminals are in full-rate production and are being fielded to Army air and missile defense platforms. The more affordable follow-on, MIDS LVT(2) is under Navy-led, multinational development and will fulfill the Army's Link-16 requirements in FY00 and beyond.

FOREIGN COUNTERPART
Link-16 is a joint and multi-national system that will be interoperable with NATO units.

FOREIGN MILITARY SALES
Link-16: Netherlands Air Force procured two JTIDS Class 2M Terminals in FY96; German Air Force procured three JTIDS Class 2M Terminals in FY98. Two planning cases are in process for the Hellenic Air Force and Japanese Air Self Defense Force to support PATRIOT.

PROGRAM STATUS
Link-16:

4QFY99-1QFY00 Completed MIDS development test and limited user test.

PROJECTED ACTIVITIES
FY00 Continue production/fielding of JTIDS Class 2M terminals to Army air and missile defense platforms until the transition to MIDS LVT(2) occurs. MIDS low-rate initial production decision/award.
FY01 MIDS program milestone III.
2QFY02 MIDS LVT(2) initial operational test and evaluation.
3QFY02 Full-rate production decision for the LVT(2).

PRIME CONTRACTORS
Link-16-JTIDS: Marconi Aerospace (Wayne, NJ)
Link-16-MIDS: Engineering Development Models: MIDSCO (Fairfield, NJ), consisting of BAE Systems (USA), Thomson-CSF (France), MID (Italy), DASA (Germany), INDRA (Spain)

* See appendix for list of subcontractors

AKMS LCMS (EKMS) COMSEC Account

Ruggedized Laptop

Tactical Printer

Ruggedized Laptop

NSA Key Processor

Data Transfer Devices

MISSION
Enable frequency management and communications security (COMSEC) management planners and operators to provide highly responsive and reliable secure communications operations at both theater/tactical and strategic/sustaining base levels.

DESCRIPTION AND SPECIFICATIONS
Army Key Management System (AKMS) automates frequency management and COMSEC management operations. It eliminates paper-keying material, hardcopy-signal-operating instruction, and associated time-and resource-intensive courier distribution. Local Key Management System (LCMS) is the Army's position in the four-tiered Electronic Key Management System (EKMS). EKMS is a key management, COMSEC materiel distribution, and logistics support system. The National Security Agency established the EKMS program to meet the following multiple objectives:

- Supply electronic key to COMSEC devices in a secure and timely manner.
- Provide COMSEC managers with an automated system capable of handling ordering, generation, production, distribution, storage, security accounting, and access control.

Automated Communications Engineering Software (ACES) is the frequency management portion of AKMS. ACES has been designated by the Military Communications Electronics Board as the joint standard for use by all services in development of frequency management and cryptonet planning. ACES will replace the legacy Revised Battlefield Electronic Communications-Electronic Operating Instructions System (RBECS) and will become the joint electronic interface to all spectrum management, Integrated System Control, Spectrum XXI, RBECS, Operational Tasking Command (OTC), Air Tasking Order (ATO), and Space ATO workstations.

The data transfer device provides an improved net-control device to automate cryptonet control operations for communications networks employing electronically-keyed COMSEC equipment.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY00 Commenced LCMS fielding.

PROJECTED ACTIVITIES
1QFY01 Commence ACES fielding.

PRIME CONTRACTORS
Group Technology Corporation (Tampa, FL)

* See appendix for list of subcontractors

Automatic Chemical Agent Detector/Alarm (ACADA)

Automatic Chemical Agent Detector/Alarm (ACADA)

Information Dominance

MISSION
Detect nerve and blister chemical agents.

DESCRIPTION AND SPECIFICATIONS
The Automatic Chemical Agent Detector/Alarm (ACADA) is an advanced point-sampling, chemical-agent alarm system. It will be used by Army, Navy, Air Force, and Marine Corps units. ACADA replaces the M8A1 Alarm as an automatic point detector and augments the Improved Chemical Agent Monitor (ICAM) as a survey instrument. It can communicate its warning automatically, using the Multiple Integrated Chemical Agent Alarm, to communicate with battlefield data transfer and warning systems. ACADA does not require a specific military operator.

Weight: 24 lb (complete w/carry case, battery pack and M42 remote alarm)
Size: 7 x 7 x 14" detector and battery box (14 lb)
Detection Capability: Nerve and blister agents
Battery Life: Approximately 15 hours at 70°F

FOREIGN COUNTERPART
Finland: M90-D1 Detector

FOREIGN MILITARY SALES
None

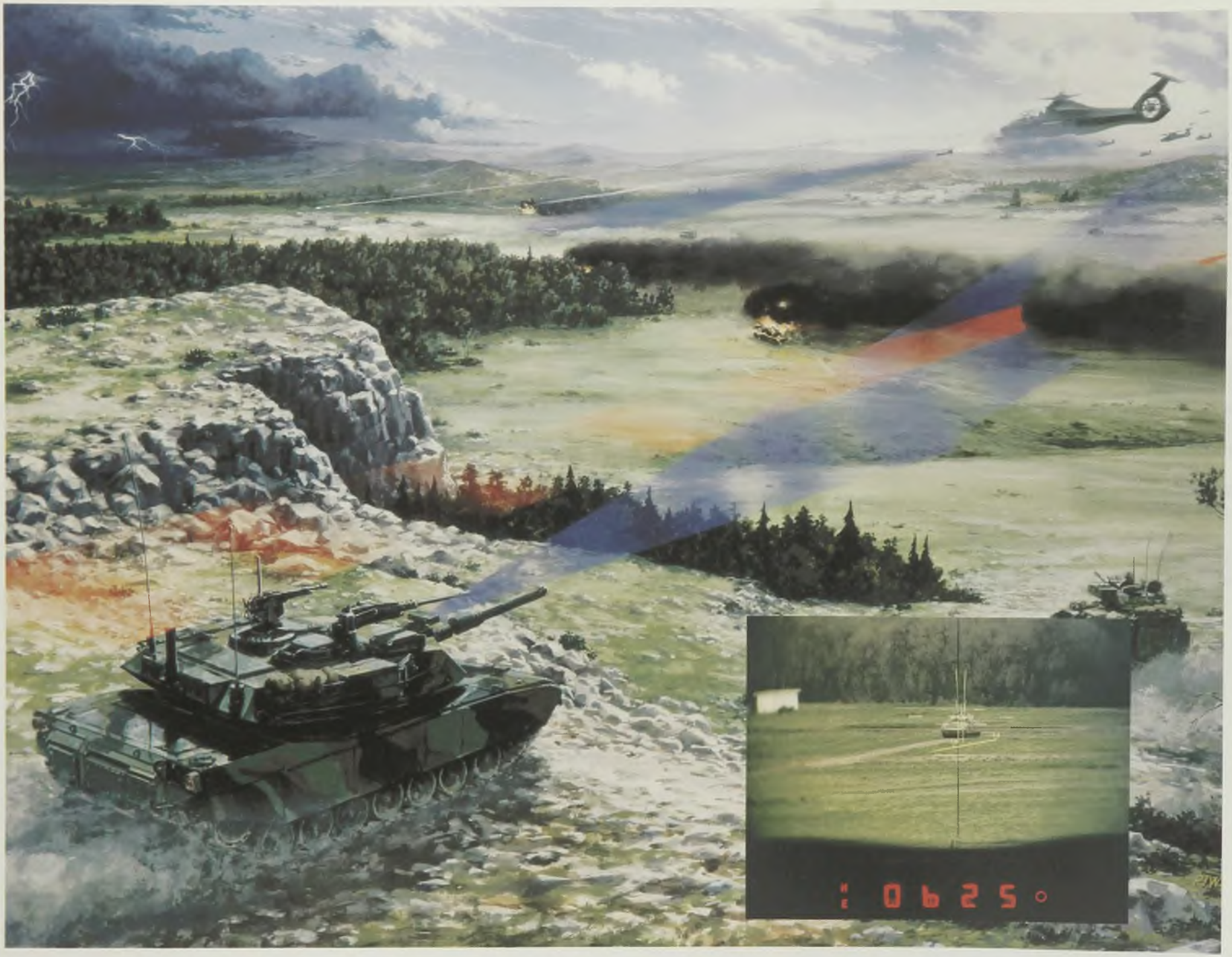
PROGRAM STATUS
1QFY96 Awarded contract with priced options (through FY00).
3QFY97 Type-classified standard.
4QFY98 First unit equipped to the Army.
FY99 Initiated fielding to Air Force, Navy, and Marine Corps.

PROJECTED ACTIVITIES
- Continue production deliveries.
- Continue pre-planned product improvement for surface sampler to provide first-time capability to detect agents/vapor on surface at cold temperatures.

PRIME CONTRACTORS
Graseby Dynamics, LTD (Watford, U.K.)

* See appendix for list of subcontractors

Battlefield Combat Identification System (BCIS)



Battlefield Combat Identification System (BCIS)

Information Dominance

MISSION

Provide the materiel solution for positive identification of friendly ground-combat vehicles to minimize battlefield fratricide incidents and enhance combat effectiveness.

DESCRIPTION AND SPECIFICATIONS

The Battlefield Combat Identification System (BCIS) is a millimeter-wave, question-and-answer combat identification system capable of identifying friendly ground combat vehicles at 150 to 5500 meters ground-to-ground and 150 to 8000 meters air-to-ground. BCIS interrogation is triggered automatically by activating the shooter platform's laser rangefinder or interrogation button, which sends an encrypted, directional query message to the targeted vehicle. If the targeted vehicle is friendly and equipped with BCIS, its transponder answers with an encrypted, omnidirectional friend message. A friend light is illuminated in the gunner's sight, supplemented by voice confirmation. If no answer is received, a voice message indicating "unknown" is provided to the gunner. The gunner then continues the engagement using tactics, techniques, and procedures. The target identification process is completed in less than a second, enabling the gunner to make a rapid fire/no-fire decision at the point of engagement. BCIS is a horizontal technology integration program and an integral part of the Army's digitized battlefield effort. The system incorporates a digital data link (DDL) feature that provides local situational awareness (SA) updates (friend identification, GPS location, and unit identification) to vehicles within one kilometer of each other at five- to six-second intervals. DDL also provides for SA information exchange between vehicles when interrogated. BCIS will be fielded on combat, combat-support, and combat service-support vehicles that operate forward of the brigade rear area.

FOREIGN COUNTERPART

France: Battlefield Identification Friend or Foe

FOREIGN MILITARY SALES

None

PROGRAM STATUS

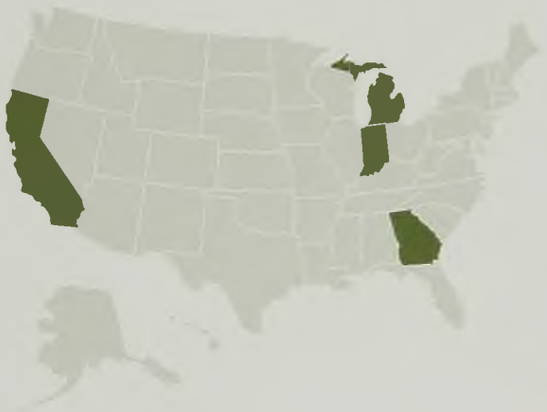
2QFY97 Sixty-two vehicles in the 4th Infantry Division equipped with BCIS participated successfully in the Task Force XXI Advanced Warfighting Experiment at the National Training Center.
FY97–98 Military utility assessment of the system conducted as part of the Joint Combat Identification Advanced Concept Technology Demonstration (ACTD).
FY99 Development and testing of installation kits for Abrams (M1A1) and Bradley (M2 ODS) completed. Engineering and manufacturing development of BCIS low-cost design hardware completed and a contract for low-rate initial production was awarded.

PROJECTED ACTIVITIES

FY00 Develop and test installation kits for additional vehicle types.
3QFY01 Conduct initial operational test and evaluation.
3QFY02 First unit equipped.
3QFY02 Milestone III decision scheduled.

PRIME CONTRACTORS

TRW (Dominguez Hills, CA)



* See appendix for list of subcontractors

Comanche

UNITED STATES ARMY

MISSION
Perform the armed reconnaissance mission for attack helicopter and air cavalry units.

DESCRIPTION AND SPECIFICATIONS
The Comanche (RAH-66) is the Army's next-generation helicopter, designed to perform the armed reconnaissance and light-attack reconnaissance mission. The Comanche will significantly expand the Army's capability to conduct reconnaissance operations in all battlefield environments, day or night, and during adverse weather. The Comanche will protect the force with its advanced electro-optical sensors, aided-target recognition, and sensor/weapons integration.

Comanche's digital communications capacity will enhance the Army's capability to win the battlefield information war, and allow interface with the Joint Surveillance and Target Attack Radar System (JSTARS) and other joint sensors and weapons platforms. Comanche's design for rapid rearm, refuel, and repair will increase the tempo of operations. With low observability, target recognition, and digitized communications, the Comanche can conduct deep, precision-strike missions against time-sensitive targets. The Comanche will replace three types of helicopters (AH-1, OH-58, and OH-6) that currently perform the armed reconnaissance mission.

Crew: 2 pilots (single-pilot operable)
Speed: 175 kt (dash)
Endurance: 2.5 hr (plus 20-minute reserve)
Armaments: 20 mm turreted gatling gun, air-to-ground and air-to-air missiles
Mission Equipment Package: Advanced electro-optical target acquisition and designation system, aided target recognition, and helmet-mounted display. Each aircraft will have provisions to incorporate a fire control radar.

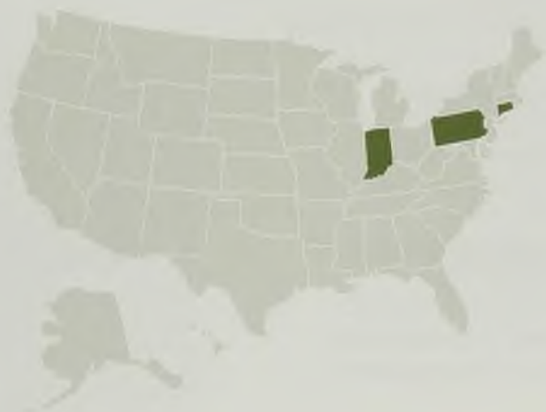
FOREIGN COUNTERPART
French/German: Tigre

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Current Milestone II decision. Milestone II decision expected 2QFY00.
Comanche is in development, with two prototype aircraft in active flight test status. The program plan is to build an additional five prototype aircraft to complete development testing, followed by eight aircraft which will be devoted to initial pilot training and operational testing.

PROJECTED ACTIVITIES
2QFY04 Begin flight testing of pre-production prototype aircraft.
2QFY05 Low-rate initial production decision.
FY07 Commence full-rate production after successful completion of initial operational test and evaluation.
1QFY07 Planned initial fielding and operational capability.

PRIME CONTRACTORS
Aircraft: Boeing and Sikorsky Team (Philadelphia, PA; Stratford, CT)
Engine: AlliedSignal/Rolls-Royce (Allison Engines) Team (Indianapolis, IN)



* See appendix for list of subcontractors

Protect the Force

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Sustain the Force

Combat Identification for the Dismounted Soldier (CIDDS)

Stand Alone CIDDS

CIDDS Weapon Subsystem (1.1 lb.)

- 1.55 Micron CIDDS Laser
- .904 Micron Integrated MILES Laser
- .840 Micron Integrated IR Aiming Pointer

CIDDS Helmet Subsystem (.90 lb.)

- CIDDS and MILES Integrated Detectors
- L-Band Radio for LW Compatability
- Multiple Conformal Antennas for Reliable RF Response

Land Warrior CIDDS

Laser Detectors

- Leverage LW Laser Detectors to Detect CIDDS Interrogation and MILES Hits

Multifunctional Laser Transmitter

- CIDDS Interrogator
- Near IR Aiming Pointer
- MILES Interoperable

Computer/Radio Subsystem

- Leverages:
  - LW Computer to Process CIDDS/ MILES Msgs
  - Soldier Radio to XMIT/Rec Friendly Response
  - Power Supply

Combat Identification for the Dismounted Soldier (CIDDS)

Information Dominance

MISSION

Provide the materiel solution for minimizing battlefield fratricide incidents among dismounted soldiers.

DESCRIPTION AND SPECIFICATIONS

Combat Identification for the Dismounted Soldier (CIDDS) is a lightweight, laser-interrogate, radio-frequency-reply, question-and-answer combat identification system. Two configurations of CIDDS are being developed: Stand-alone and Land Warrior.

The Stand-alone CIDDS includes a weapon-mounted interrogator and a helmet-mounted transponder, each weighing approximately one pound. The weapon-mounted interrogator integrates an eyesafe combat ID laser; a near-infrared laser pointer for aiming the soldier's weapon at night with night vision goggles; and a Multiple Integrated Laser Engagement System (MILES) laser for an embedded training capability that is interoperable with MILES/MILES 2000. The helmet-mounted transponder consists of CIDDS- and MILES-integrated laser detectors, an electronic processor unit, and omni-directional conformal antennas.

The CIDDS Land Warrior configuration uses the weapon-mounted interrogator developed for the Stand-alone CIDDS. It leverages the Land Warrior laser detectors to detect CIDDS interrogations and MILES hits, the Land Warrior computer to process CIDDS/MILES messages, and the Land Warrior soldier radio to transmit friendly responses.

CIDDS' operating range is a minimum of 1.1 kilometers under clear weather conditions, and exceeds the soldier's target acquisition capability under degraded atmospheric conditions.

CIDDS, a horizontal technology integration program, fulfills requirements stated in the Operational Requirements Document for use by Army, Marine and Special Operations forces. The acquisition objective is approximately 102,000 systems, including 68,000 Stand-alone and 34,000 Land Warrior versions.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

4QFY97 Awarded competitive contract for engineering and manufacturing development (EMD) effort.

FY99 Continued CIDDS EMD efforts, including the following accomplishments:

- Completed hardware and software design
- Completed weapon integration kit design
- Completed fabrication and testing of five prototypes for user evaluation
- Began redesign of helmet electronics and weight reduction effort
- Began fabrication of laser interrogator

PROJECTED ACTIVITIES

FY00 Complete re-design of helmet electronics and weight reduction effort; complete fabrication, assembly, and testing of 148 EMD hardware systems to support technical and operational testing.

1QFY01 Conduct initial operational test and evaluation.

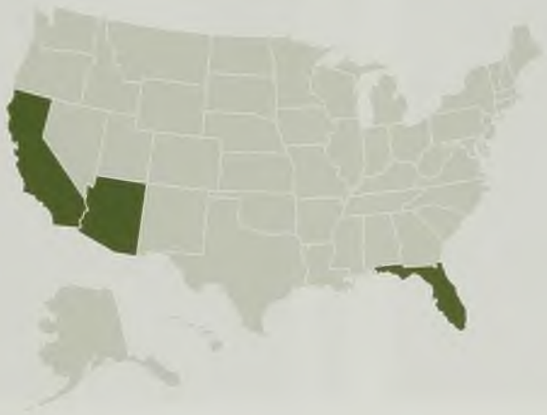
2QFY01 Begin low-rate initial production.

3QFY01 First unit equipped.

1QFY02 Milestone III decision scheduled.

PRIME CONTRACTORS

Motorola (Scottsdale, AZ)



* See appendix for list of subcontractors

Combat Service Support Control System (CSSCS)

MISSION
Provide timely situational awareness and force projection information to determine capability of supporting current operations and sustaining future operations as a key logistical enabler for the Army Vision.

DESCRIPTION AND SPECIFICATIONS
The Combat Service Support Control System (CSSCS) is a decision-support system that assists commanders and their staff in planning and executing CSS operations. The CSSCS will rapidly collect, store, analyze, and disseminate critical logistics, medical, financial, and personnel information.

Currently, CSS commanders and staffs manually gather, correlate, and analyze volumes of technical data from the existing Standard Army Management Information Systems (STAMIS) and the Army Tactical Command and Control System. The CSSCS extracts summary information from the STAMIS; accepts input from other elements of the CSS community; and exchanges information with other automated systems to evaluate CSS information about the force-level commander's tactical courses of actions.

The CSSCS is the combat service support component of the Army Battle Command System (ABCS). The CSSCS is organic to CSS units and headquarters staffs, within the maneuver brigades, separate brigades, armored cavalry regiments, divisions, corps, and echelons above corps. The CSSCS is comprised of computer units, common operating environment software, and CSSCS-unique software. The CSSCS is deployable in a table-top configuration, with or without storage/transit cases, and can also be housed in the family of Standardized Integrated Command Post Systems (SICPS). While the current sources of CSS data are the STAMIS systems and manual entry, the future data sources are automated links to FBCB2 and GCSS-A.

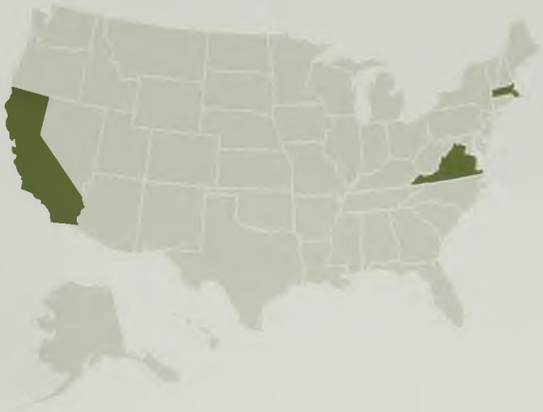
FOREIGN COUNTERPART
PM CSSCS participates actively with Germany, France, and Great Britain in the Quadrilateral Army Communications Information Systems Interoperability Group. In addition, Canada and Australia are monitoring the status of CSSCS development.

FOREIGN MILITARY SALES
None

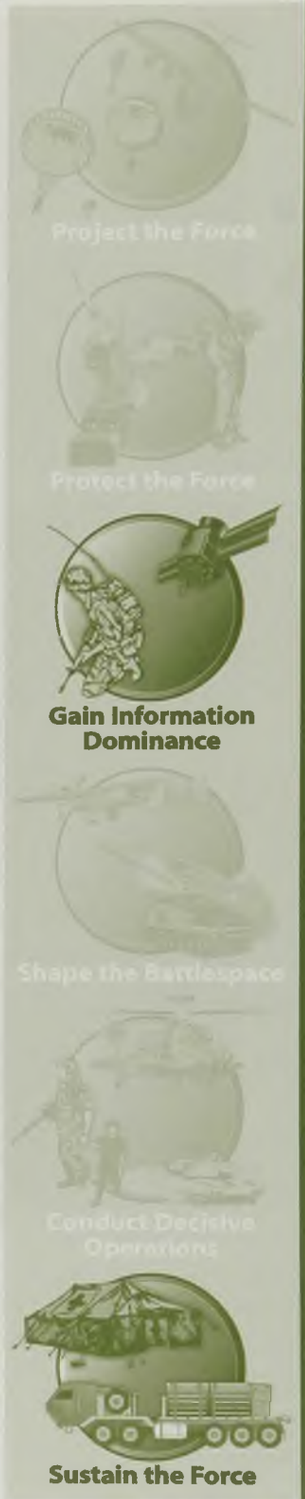
PROGRAM STATUS
CSSCS Version 3 software provided an initial operational capability at division and corps level and included initial horizontal interoperability with ABCS systems.
Current Version 4 extends CSSCS to echelons above corps (EAC), and provides additional capabilities. Version 5, the objective CSSCS software, will extend CSSCS capabilities to joint, allied, and coalition forces.

PROJECTED ACTIVITIES
- Field Version 4.
- Develop Version 5.
- Support Army Warfighting Experiments.

PRIME CONTRACTORS
TRW (Carson, CA); Lockheed Martin (Springfield, VA); General Dynamics (Taunton, MA)



* See appendix for list of subcontractors



Command and Control Vehicle (C2V)

UNITED STATES ARMY

MISSION

Provide a highly mobile, survivable, and reconfigurable platform capable of hosting current and future command, control, communications, computer, and intelligence (C4I) systems for operational planning use by battalion through corps battle staffs in heavy force operations.

DESCRIPTION AND SPECIFICATIONS

The C2V program is terminated in the FY01 President's Budget in support of the Army Vision and its modernization efforts. The decision to terminate was based on an assessment of affordability, operational risk, and Army priorities; however, a valid requirement still exists for a command and control vehicle.

The Command and Control Vehicle (C2V) has the following specifications:

Length: 35.4 ft
Width: 14.04 ft
Height: 12.72 ft
Weight: 56,000-66,000 lb, combat-loaded
Power train: 600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3EC hydromechanical automatic transmission
Cruising range: 275 mi
Road speed: 40 mph
Crew: Variable (maximum of 9)
Armament: 7.62 mm, M240 series machine gun
Distribution: Corps-battalion
Models/variants: Platform for the armored medical treatment vehicle (planned)

FOREIGN COUNTERPART

China: Type 85 ACV, WZ-506, Type 90 CV; Commonwealth of Independent States: BTR-50PU, MT-LBU, BMP-1 Kshm; France: AMX-10PC, AMX VTT/PC; Germany: Tpz1 FuFu (Fuchs); United Kingdom: MCV-80 Warrior CV, FV-432C.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

Current Low-rate initial production.

PROJECTED ACTIVITIES

3QFY00 Initial operational testing and evaluation.
4QFY00 Milestone III decision.
1QFY01 Full-rate production.

PRIME CONTRACTORS

United Defense, L.P. (Arlington, VA)

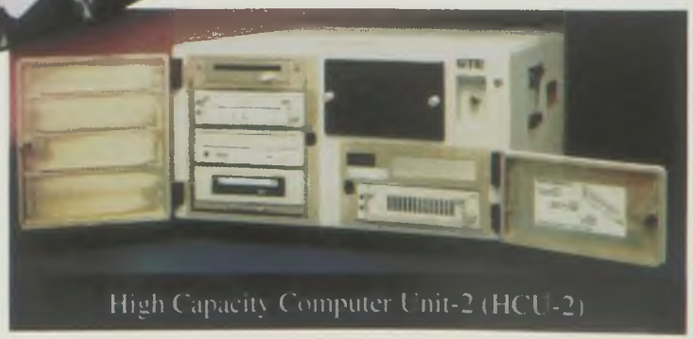
* See appendix for list of subcontractors

Common Hardware Systems (CHS)

20" Color Flat Panel Display (CFPD)

Compact Computer Unit-2 (CCU-2)

Versatile Computer Unit (VCU)



High Capacity Computer Unit-2 (HCU-2)

MISSION
Provide common hardware systems and common software (including common operating environment (COE) software) for the Army Battle Command System (ABCS) which includes the Global Command and Control System–Army (GCCS-A), Army Tactical Command and Control Systems (ATCCS), and Force XXI Battle Command Brigade and Below (FBCB2).

DESCRIPTION AND SPECIFICATIONS
The Common Hardware Systems (CHS) program improves interoperability and lowers life-cycle costs by standardizing battlefield command and control (C2) automation through centralized buys of non-developmental items (NDI), standardized protocols, and the development of reusable common software (CS). The program provides CHS to over 80 Army and Department of Defense customers. The CHS-2 and lightweight computer unit (LCU) programs provide the following hardware: CHS-2 ultra computer unit (UCU), handheld terminal unit (HTU), high capacity computer unit (HCU), compact computer unit (CCU), versatile computer unit (VCU), color flat panel display (CFPD), notebook computer unit (NCU), and the LCU and tactical communications interface module (TCIM) for interface to tactical radios. These contracts provide commercial, ruggedized and highly ruggedized hardware versions of computers and peripherals. They also provide commercial industry-based logistics support that meets the unique requirements of the tactical military units.

CHS/LCU software: UNIX-POSIX; RDBMS; GKS, PHIGS, PEX; DoD Protocols; GOSIP; E-MAIL; NIX, NFX, DCE; MPN/DDN X.28; ADA; DOS; PURGING SW; CASE TOOLS.

	CHS-2(HTU)	CHS-2(HCU-2)	CHS-2(CCU-2)
Processor:	80586	UltraSPARC IIi	UltraSPARC IIi/Axi
MHz clock:	133	333	333
RAM:	16 or 32MB	32MB–1GB	1GB

	CHS-2(VCU-2)	CHS-2(VCU-1)	CHS-2(NCU)
Processor:	UltraSPARC IIi/Axi	Pentium III	Pentium MMX
MHz clock:	333	500	266
RAM:	1GB	1GB	32–160MB

	CHS-2(UCU)	LCU
Processor:	UltraSPARC II	Pentium
MHz clock:	300	200
RAM:	64MB–1GB	16–128MB

The CHS hardware can be procured in Version 1 (commercial workstations), Version 2 (ruggedized workstations), and Version 3 (MIL-SPEC handheld terminal unit and LCU/TCIM), in addition to commercial off-the-shelf counterparts.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
April 10, 1995 General Dynamics (formerly GTE) awarded CHS-2 contract, a follow-on to the CHS-1 contract. Version 2 hardware is fully qualified and was successfully used during both the Army Warfighter Experiment (AWE) Task Force XXI exercise and the Division AWE (DAWE) at Ft. Hood, TX.

PROJECTED ACTIVITIES
2QFY01 Commence CHS-2 Option Year 2.
3QFY01 LCU last order.

PRIME CONTRACTORS
CHS-2: General Dynamics (Taunton, MA)
LCU: Litton (San Diego, CA)

* See appendix for list of subcontractors

Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set (CHATS)

UNITED STATES ARMY

MISSION
Provide automation support to tactical counter intelligence/human intelligence (CI/HUMINT) teams operating in the field.

DESCRIPTION AND SPECIFICATIONS
The AN/PYQ-3 Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set (CHATS) is a portable, ground-based, transit-cased suite of hardware. Operating up to the secret level, the AN/PYQ-3 CHATS enables CI/HUMINT team leaders to manage assets and analyze information collected through investigations, interrogations, collection missions, and document exploitation. Teams can store information electronically in a local database, associate information with digital photography and digital maps, interactively generate standard messages, receive and transmit information over existing military and civilian communications, and query and share databases with similar systems.

The AN/PYQ-3 CHATS provides these functions using a combination of commercial-off-the-shelf software and tailored government-developed software, operating on the CHATS laptop computer within a hardened power supply transport case. Accessory equipment includes a digital camera, scanner, printer, global positioning system receiver, and digital encryption device.

FOREIGN COUNTERPART
Foreign counterparts provide similar capabilities, but none that duplicate the AN/PYQ-3 CHATS.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
FY99–00 Began worldwide fielding of CHATS Version 2.

PROJECTED ACTIVITIES
FY00–04 Complete development and fielding of enhanced CI/HUMINT automation products, such as the CI/interrogation operations (CI/INTG OPS) workstations, individual tactical reporting tool, and CI/HUMINT single-source workstation.
FY00–01 Complete development to provide CI/HUMINT data to the All Source Analysis System (ASAS).
FY00–05 Provide incremental software enhancements and technology insertion points for hardware.

PRIME CONTRACTORS
CHATS: Engineering System Solutions (Frederick, MD)
CHATS Software: Sterling Software (Sierra Vista, AZ)

* See appendix for list of subcontractors

Digital Topographic Support System (DTSS) (WRAP Candidate)

MISSION
Provide commanders at brigade through echelons above corps with automated terrain analysis, terrain database management, and graphics reproduction in support of intelligence preparation of the battlefield, command and control, terrain visualization, and weapons and sensor systems.

DESCRIPTION AND SPECIFICATIONS
The Digital Topographic Support System (DTSS) is a standard, automated, tactical combat support system capable of receiving, formatting, creating, manipulating, merging, updating, storing, and retrieving digital topographic data and then processing these data into hardcopy and softcopy topographic products. DTSS accepts topographic and multi-spectral imagery data from the National Imagery and Mapping Agency's standard digital databases, commercial sources, and national technical means assets.

DTSS functional capabilities include creation of intervisibility, mobility, environmental, 3-D terrain visualization, and special-purpose products; and the creation, augmentation, modification, and management of topographic data. The DTSS will provide updated map background, terrain intelligence, and terrain data management to all the Army Battle Command System workstations on the battlefield and accept terrain intelligence/data updates from these systems.

DTSS uses the latest commercial off-the-shelf technology in printers, scanners, and computer workstations combined with image processing and geographic information system software. DTSS will be supported by environmental control units, generators, and communication equipment that are part of the standard Army inventory. The tactical system will be produced in two variants: heavy (DTSS-H) and light (DTSS-L). DTSS-H will be housed in a 20 ft International Standards Organization (ISO) shelter and mounted on a standard five-ton truck. DTSS-L will be housed in a lightweight multipurpose shelter mounted on a High-Mobility Multipurpose Wheeled Vehicle (HMMWV).

FOREIGN COUNTERPART
United Kingdom: TACISYS, Australia: TOPOSS, Canada: DGSS.

FOREIGN MILITARY SALES
None

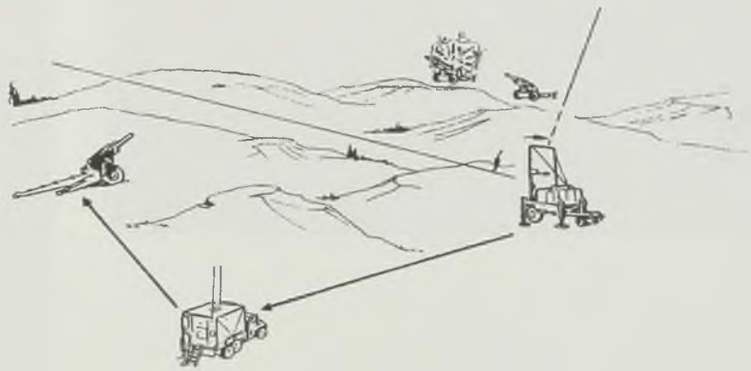
PROGRAM STATUS
March 3, 1999 Awarded DTSS-L production contract (20 systems).
March 31, 1999 Procured resident school training hardware and software.
December 14, 1999 Completed fielding of DTSS-H (9 systems).
December 28, 1999 Awarded DTSS-L production option (16 systems).
2QFY00 Conducted first article test for the DTSS-L.

PROJECTED ACTIVITIES
3QFY00 Deliver Build 6.2 software to 4ID.
4QFY00 DTSS-L first unit equipped.
FY00–14 Continue DTSS phase I preplanned product improvements program.

PRIME CONTRACTORS
Litton/TASC (Reston, VA); SFA (Frederick, MD); Sechan Electronics (Lititz, PA)

* See appendix for list of subcontractors

Firefinder (AN/TPQ-36 (V)8)



MISSION
Locate the firing position of hostile mortars, artillery, and rockets automatically.

DESCRIPTION AND SPECIFICATIONS
AN/TPQ-36 (V)8 Firefinder Radar, Electronics Upgrade (EU), replaces the existing shelter that was fielded in the early 1980s and utilizes the same antenna. This materiel change greatly improves the operations central shelter through the installation of state-of-the-art electronics, including common hardware systems in the lightweight multipurpose shelter (LMS). EU increases mortar detection range and target throughput and greatly improves the operator environment.

EU is an open systems architecture design and will enable Firefinder to communicate on the digitized battlefield. EU will also incorporate dual environmental control units and a gas particulate filter unit for greater survivability and soldier comfort. Major subsystems of EU include an operator control station, a control display terminal, and a radar processor. The control station is the man-machine interface and is a modern Windows-type display. Using the display terminal, the operator will be able to control system operations from a site up to 100 meters from an LMS. The radar processor performs all system signal processing functions, maximizing performance with over a 90% probability of weapon locations and a 90% correct target classification.

EU and new LMS will enhance the man-machine interfaces and electronics environment by providing over 50% more interior space and improved environmental control. EU will reduce life-cycle costs, prevent obsolescence, and enhance crew survivability.

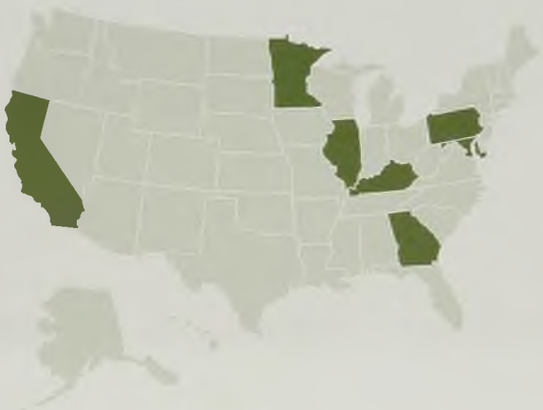
FOREIGN COUNTERPART
European Consortium-Sponsored EuroArt Cobra; Sweden: Arthur System; Russia: Zoopark; China: BL904.

FOREIGN MILITARY SALES
AN/TPQ-36 (V)8: Turkey: 4 systems in production, Portugal: 2 systems in production. There are currently 30 **AN/TPQ-37** radars sold to nine countries: China: 4; Egypt: 3; Israel: 4; Jordan: 2; Korea: 4; Italy-NATO: 1; Saudi Arabia: 7; Singapore: 3; Taiwan: 2.

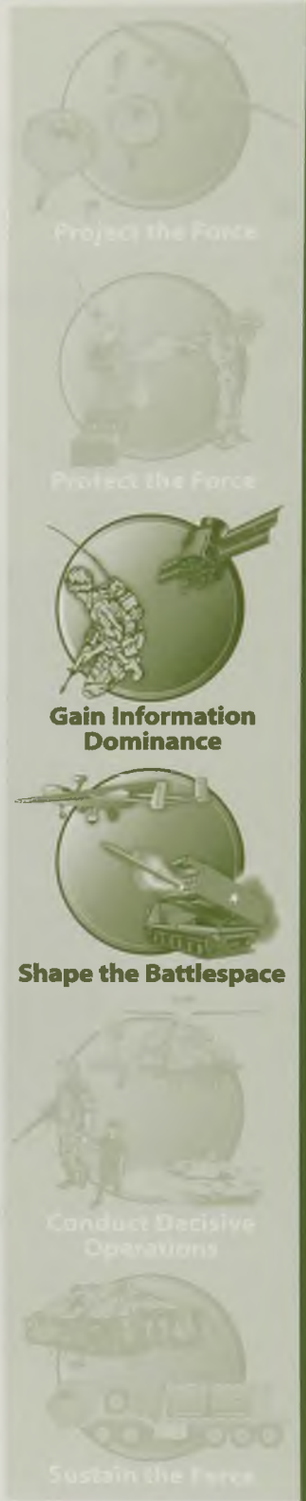
PROGRAM STATUS
4QFY96 Awarded initial production contract. A total of 44 systems have been delivered: 22 for the U.S. Army and 22 for the United States Marine Corps (USMC).
FY99 Commenced fielding to Army and USMC units; currently ongoing.
4QFY99 Awarded follow-on production contract awarded for additional U.S. and foreign military sales systems.

PROJECTED ACTIVITIES
FY00 Continue fieldings.
FY01–03 Procure additional systems.
FY02–04 Complete fieldings.

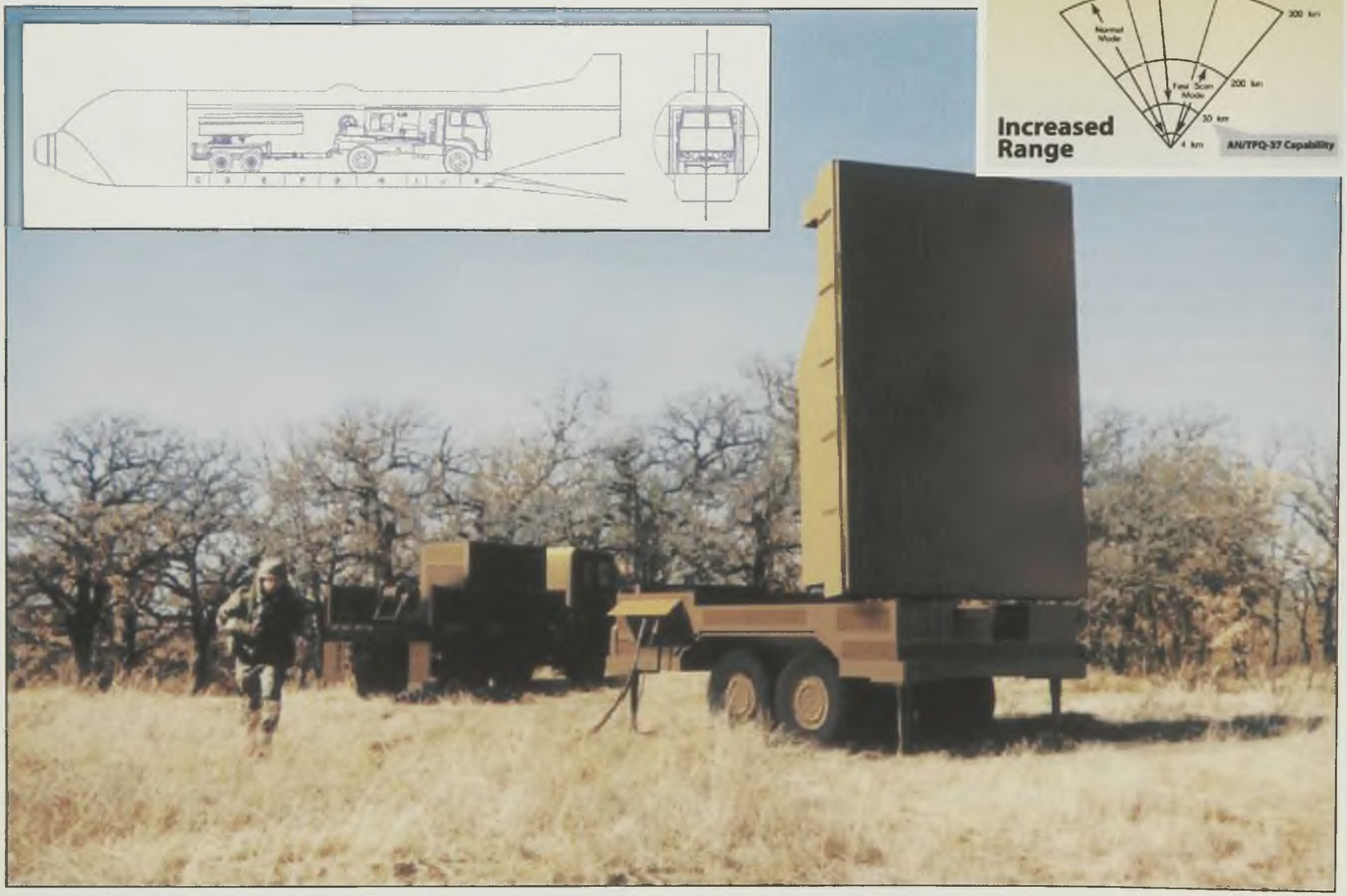
PRIME CONTRACTORS
Northrop Grumman (Chicago, IL; Benton Park, PA; Baltimore, MD)



* See appendix for list of subcontractors



Firefinder (AN/TPQ-47)



UNITED STATES ARMY

MISSION
Develop and field the next-generation Firefinder systems with longer range and enhanced target-location capability while reducing manpower and meeting operational support requirements.

DESCRIPTION AND SPECIFICATIONS
The Firefinder (AN/TPQ-47) program will replace the AN/TPQ-37 Artillery Locating Radar. The AN/TPQ-47 system will double the current AN/TPQ-37 artillery range performance to 60 kilometers, while improving accuracy and target throughput. The AN/TPQ-47 will also provide a new capability for missile and rocket detection at ranges of 150–300 kilometers. The system will use the standard Army light medium tactical vehicles in a highly mobile, transportable, and survivable configuration that reduces crew size from 12 to 8. The system will be capable of roll-on/roll-off from a single C-130 aircraft for rapid deployment. The program will further leverage the AN/TPQ-36 (V)8 electronics upgrade program by using the same operations central shelter currently being fielded.

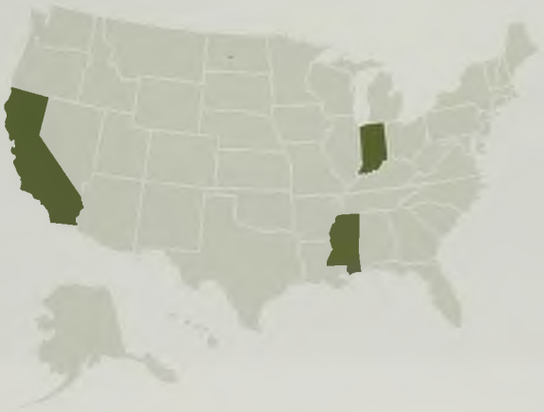
FOREIGN COUNTERPART
European Consortium-Sponsored EuroArt Cobra; Ukraine: 1L220-U.

FOREIGN MILITARY SALES
None

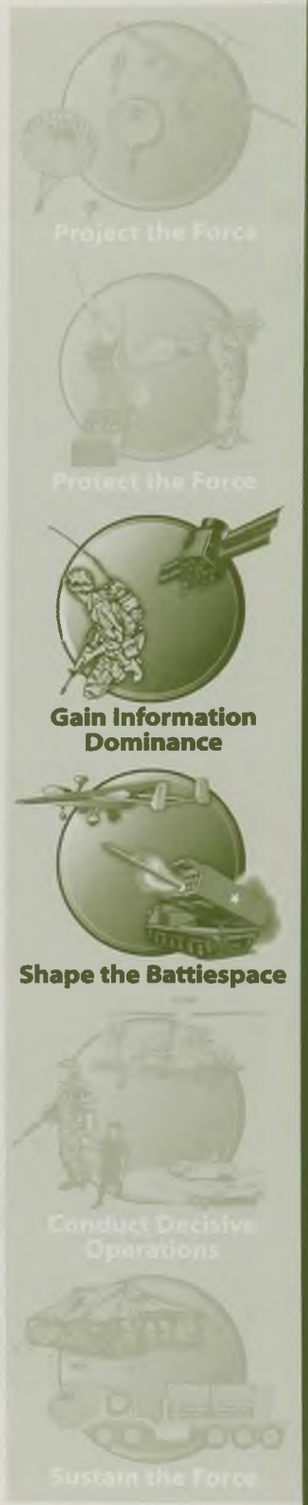
PROGRAM STATUS
1QFY97 Approved milestone II decision; released competitive solicitation; awarded block II contract for three systems to Raytheon Systems Company, with work starting July 1, 1998.
July 28, 1998 Established partnering agreement with Raytheon.
July 20, 1999 Conducted preliminary design review.

PROJECTED ACTIVITIES
1QFY01 Critical design review scheduled.
3QFY02 Begin government development test.
1QFY03 Begin government operational test.
2QFY03 Milestone III decision scheduled.

PRIME CONTRACTORS
Raytheon (El Segundo, CA; Forrest, MS; Fort Wayne, IN); TRW (CA)



* See appendix for list of subcontractors



Force XXI Battle Command Brigade-and-Below (FBCB2)

UNITED STATES ARMY

Force XXI Battle Command Brigade-and-Below (FBCB2)

Information Dominance

MISSION

Field a digital command-and-control system that provides battle command and situational awareness information from the brigade level down to the soldier/platform level.

DESCRIPTION AND SPECIFICATIONS

The Force XXI Battle Command Brigade-and-Below (FBCB2) forms the principal digital command-and-control system for the Army at brigade levels and below. The FBCB2 system is designated acquisition category 1D and is in the engineering and manufacturing development (EMD) phase. Applique hardware and software are integrated into the various platforms at brigade and below, as well as appropriate division and corps slices necessary to support brigade operations. The system features the interconnection of platforms through a communications infrastructure called the tactical internet to transmit situational awareness data.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

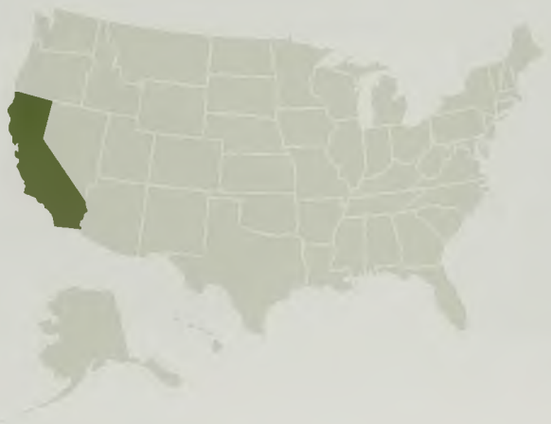
3–4QFY99 Conducted successful Reliability Demonstration Test.
Delivered Versions 3.0 and 3.1 of FBCB2 software and EBC software.
Achieved ranking as one of top five Army Chief of Staff programs.
1QFY00 Conducted Army Systems Acquisition Review Council review.
2QFY00 Delivered Version 3.2 software.
Awarded Low-Rate Initial Production (LRIP) contract.
Conducted Field Test #2.

PROJECTED ACTIVITIES

3QFY00 Field Development Test and Evaluation/Limited User Test #2 (FDTE/LUT 2).
4QFY00 Equip 4th Infantry Division at Fort Hood (LRIP).
Complete field test 3.
Release Version 3.3 software.
1QFY01 Award follow-on system engineering and integration contract.
3QFY01 Hold DCX 1 at National Training Center/LUT 3.
4QFY01 Hold DCX 2 (Ft. Hood).
FY02 Reevaluate program acquisition strategy/plan to support the Army's digitized force effectiveness evaluation.
1QFY02 Undertake Initial Operational Test and Evaluation (IOT&E).
3QFY02 Capitalize milestone.
Award full-rate production contract.

PRIME CONTRACTORS

TRW (Carson, CA)



* See appendix for list of subcontractors

Forward Area Air Defense Command, Control and Intelligence (FAADC2I)

MISSION

Collect, digitally process, and disseminate real time target cueing and tracking information; command, control, and intelligence (C2I) information to all Short Range Air Defense (SHORAD) weapons (Avenger, Bradley Linebacker, Manportable Air Defense System [MANPADS], joint and combined arms).

DESCRIPTION AND SPECIFICATIONS

The Forward Area Air Defense Command, Control and Intelligence (FAADC2I) System (Project D126) provides critical, automated threat aircraft, cruise missile, and Unmanned Aerial Vehicle (UAV) Battle Management/Command, Control, Communications, and Intelligence (BM/C4I) information to support the planning and decision process at various levels of command. Unique FAADC2I software will provide mission capability by integrating FAADC2 engagement operations software with the Joint Tactical Information and Data System (JTIDS), Single Channel Ground and Airborne Radio System (SINCGARS), Enhanced Airborne Warning and Control System (AWACS), Sentinel, and the Army Battle Command System (ABCS) architecture. FAADC2I provides joint C2 interoperability and horizontal integration with Patriot, THAAD, MEADS, and SHORAD weapon systems. FAADC2I is the first system to digitize for the First Digitized Division (FDD)/III Corps.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

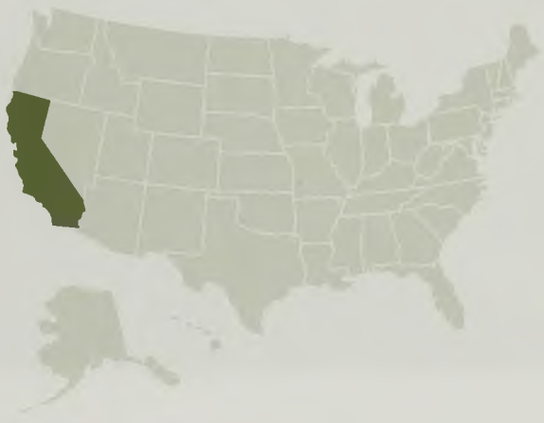
- Completed blocks I and II.
- Awarded block III contract, 4QFY95.
- Completed Version 5.1 software System Certification Test (SCT) 2QFY99.
- Completed fieldings for 10 divisions, an armored cavalry regiment (ACR), a National Guard corps Avenger battalion, and a training base set.
- Began Version 5.2 software integration, assembly, and test (IA&T)(initial), 1QFY00.

PROJECTED ACTIVITIES

2–3QFY00 Commence Force XXI Battle Command Brigade and Below (FBCB2) limited user test (LUT).
4QFY00 Complete Version 5.2 software SCT.
1QFY01 Commence FAAD command and control LUT.
FY03 Begin block IV software development.

PRIME CONTRACTORS

TRW (Redondo Beach, CA)



* See appendix for list of subcontractors

Global Command and Control System–Army (GCCS-A)

UNITED STATES ARMY

Global Command and Control System–Army (GCCS-A)

Information Dominance

MISSION

Provide automated command and control (C2) tools for Army strategic and theater commanders to enhance warfighter capabilities throughout the spectrum of conflict, during joint and combined operations, in support of the National Command Authority.

DESCRIPTION AND SPECIFICATIONS

The Global Command and Control System–Army (GCCS-A) is the Army's strategic and theater C2 system. It provides readiness, planning, mobilization, and deployment capability information for strategic commanders. For theater commanders, GCCS-A provides the following:

- Common operational picture and associated friendly and enemy status information.
- Force-employment planning and execution tools (receipt of forces, intra-theater planning, readiness, force tracking, onward movement, and execution status).
- Overall interoperability with joint, coalition, and the tactical Army Battle Command Systems (ABCS).

The GCCS-A supports Army units from the National Command Authority, commanders-in-chief in the theater, and down through the joint task force commander. As part of ABCS, GCCS-A provides a seamless Army extension from the strategic GCCS system to echelons corps and below. Compatibility and interoperability is achieved by building the GCCS-A applications to operate on the Defense Information Infrastructure (DII)/Common Operating Environment (COE), and through interfaces to other C2 systems within the Army as well as to other services.

DII COE specifies a common system infrastructure for all C2 systems in accordance with the joint technical architecture guidelines. This approach provides common support architecture, with modular software for use by the services/agencies in developing mission specific solutions to their C2 requirements. The system's hardware platform is based on commercial-off-the-shelf hardware and the products in the Common Hardware Software II contract. The system architecture links users via local area networks in client/server configurations with an interface to the Secret Internet Protocol Router Network (SIPRNET) for worldwide communication.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

- Fielded GCCS-A to U.S. Army Forces Command (FORSCOM); U.S. Army, Europe (USAREUR); U.S. Army, Pacific (USARPAC); U.S. Southern Command (SOUTHCOM); Headquarters, Department of the Army (HQDA); U.S. Army Central Command (ARCENT); and the Combined Forces Command, Korea.
- GCCS-A fully involved in the Army's digitization efforts.

PROJECTED ACTIVITIES

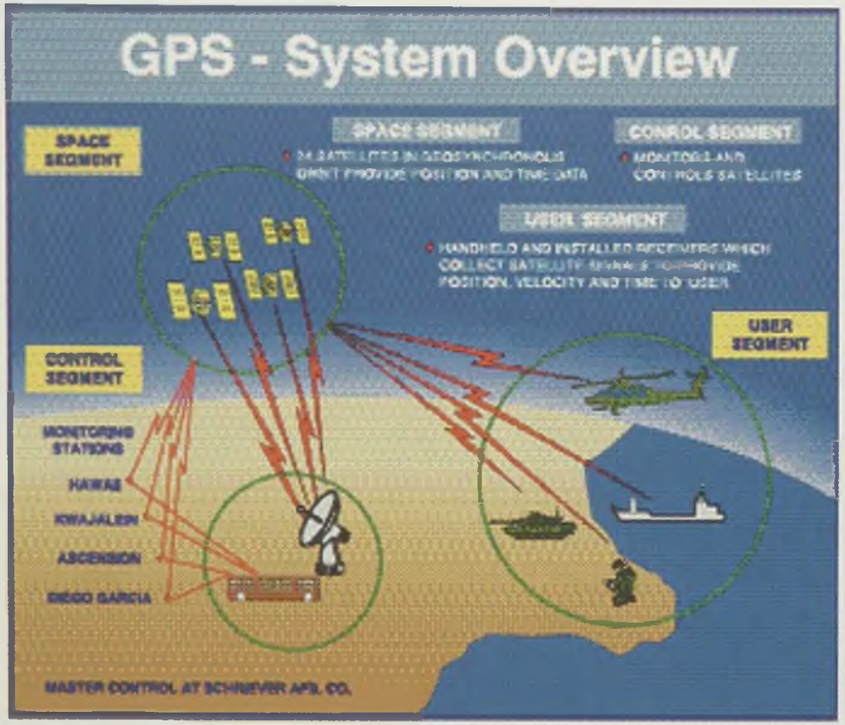
- Complete development and initial fielding of a common theater baseline.
- Modify strategic and theater architectures to support joint GCCS updates.
- Continue the spiral development process in support of Army digitization and program requirements.

PRIME CONTRACTORS

Lockheed Martin (Springfield, VA)

* See appendix for list of subcontractors

Global Positioning System (GPS)



User Equipment Segment


PLGR


BAGR


SLGR


AN/ASN-149


GPS-S


MAGR


CUGR


EGI


DGNS


GRAM


GPS/NS

MISSION
Provide accurate, continuous, all-weather, common-grid, world-wide navigation, positioning, velocity and timing information to land, sea, air, and space-based users.

DESCRIPTION AND SPECIFICATIONS
The Global Positioning System (GPS) is a joint service program, led by the Air Force. GPS is a space-based navigation system that distributes positioning, velocity, and time (PVT) data. It has three segments: a space segment (24 satellites), a ground control segment, and a user equipment segment. User equipment consists of receivers configured for handheld use, ground, aircraft and watercraft applications. Military GPS receivers have Precise Positioning Service (PPS) capabilities that provide enhanced accuracy and signal protection; commercial units do not. The Army represents over 80% of the Department of Defense requirement for user equipment.

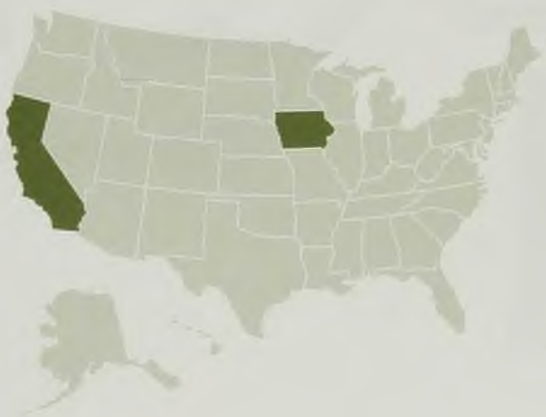
FOREIGN COUNTERPART
Russia: GLONASS, Europe: GALILEO (planned for initial testing in FY04).

FOREIGN MILITARY SALES
A variety of PPS-capable GPS receivers are sold to the North Atlantic Treaty Organization (NATO) and other allies.

PROGRAM STATUS
Precision Lightweight GPS Receiver (PLGR): Completed accelerated fielding in 4QFY98; the Army has acquired more than 83,000 PLGRs, the primary handheld GPS receiver.
Small Lightweight GPS Receiver (SLGR): Removed most SLGRs from service. The SLGR, a commercial GPS receiver bought during Desert Storm, is now being removed from service except for interim use in some aircraft.
Standalone Air GPS Receiver (SAGR): Transfer from interim use in overseas aircraft to equip the AH-1H and OH-58A/C aircraft fleet.
Cargo Utility GPS Receiver (CUGR): Continue installation to the UH-1 aircraft fleet. Other receivers being installed to Army aircraft include the AN/ASN-128B/C and the Embedded GPS Inertial Receiver. PM GPS fielded 90 high-precision GPS Survey Receivers (GPS-S) to topographic engineering companies in 1998.

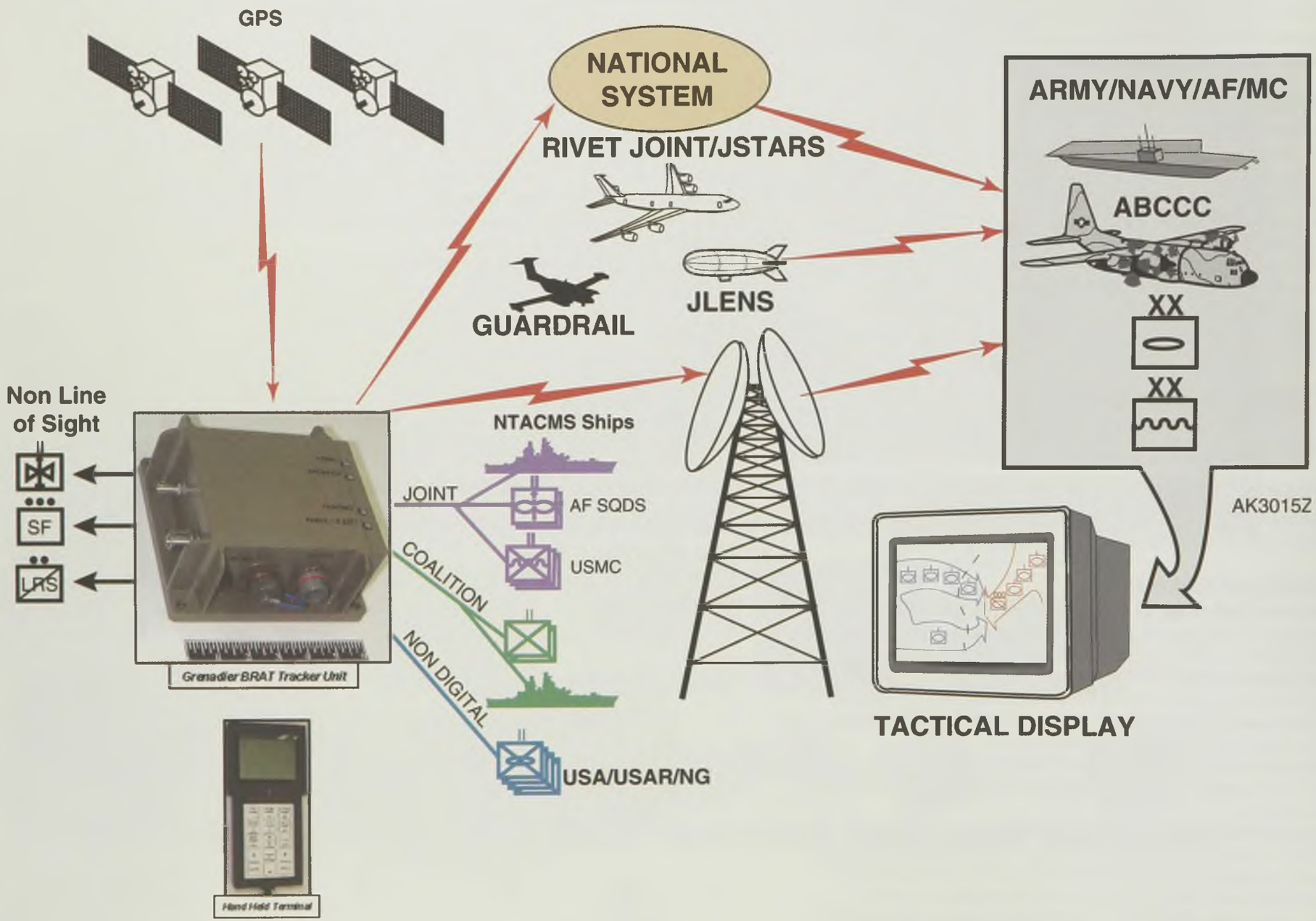
PROJECTED ACTIVITIES
FIELDING: Continue installation of CUGR to UH-1 helicopters through FY01, funds permitting. Support ongoing SAGR installations to AH-1H and OH-58A/C aircraft and provide limited repair-by-replacement support for SLGR.
MODERNIZATION: Examine design alternatives to provide enhanced military performance while maintaining uninterrupted civilian use. Anticipated upgrading or replacing all Army GPS receivers during the FY03-11 timeframe. The Navigation Warfare (NAVWAR) program, directed by the USD(A&T) to address known GPS vulnerabilities is now a component of the larger GPS modernization program.
HORIZONTAL TECHNOLOGY INSERTION (HTI): Three systems will be designated as horizontal technology integration initiatives: the Defense Advanced GPS Receiver (DAGR), the GPS Receiver Applications Module (GRAM) and the GPS Inertial Navigation System (GPS/INS). Each will incorporate design changes dictated by GPS Modernization. DAGR will replace most PLGRs. GRAM and GPS/INS will allow the integration of new GPS technology to a broad range of host platforms and vehicles. The GPS Tactical Operational Requirements Document projects the total number of receivers required during this timeframe to exceed 650,000 at an estimated initial procurement cost of $1.9 billion.

PRIME CONTRACTORS
Rockwell Collins (Cedar Rapids, IA); Trimble Navigation (Sunnyvale, CA)



* See appendix for list of subcontractors

Grenadier Beyond Line-of-Sight Reporting and Targeting (BRAT)(GB)(WRAP Candidate



MISSION
Provide a near-term capability for tracking blue-force assets operating deep, and for other situations beyond the normal digital umbrella.

DESCRIPTION AND SPECIFICATIONS
Grenadier Beyond Line of Sight Reporting and Targeting (BRAT) (GB) is a small, lightweight transceiver that derives location information from Global Positioning System (GPS) satellite broadcasts. It transmits its unit identification, location, and message in a low probability of intercept (LPI)/low probability of detect (LPD) waveform. This information can then be displayed on Tactical Exploitation of National Capabilities (TENCAP) systems, Forward Area Support Team (FAST) Mobile Integrated Tactical Terminals (MITT), Advanced Electronic Processing and Dissemination Systems (AEPDS), the Global Command and Control System (GCCS), Global Command and Control System–Army (GCCS-A), and the Maneuver Control System (MCS). Information can also be displayed on any system with a tactical receive equipment capability, including the common ground station and the Special Operations forces intelligence vehicle.

GB uses the same LPI/LPD used by the combat survivor evader locator (CSEL) radio being fielded to all services. The production GB devices will use the same three printed-circuit cards as the CSEL radio, packaged in a box suitable for mounting in military vehicles. GB leverages existing infrastructure to include communications relay systems, worldwide broadcast systems, and existing command and control systems. Software has been modified on GCCS to support GB, which will be released and propagated to GCCS-A. TENCAP systems are being modified to provide GB data to MCS at the division and corps level.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

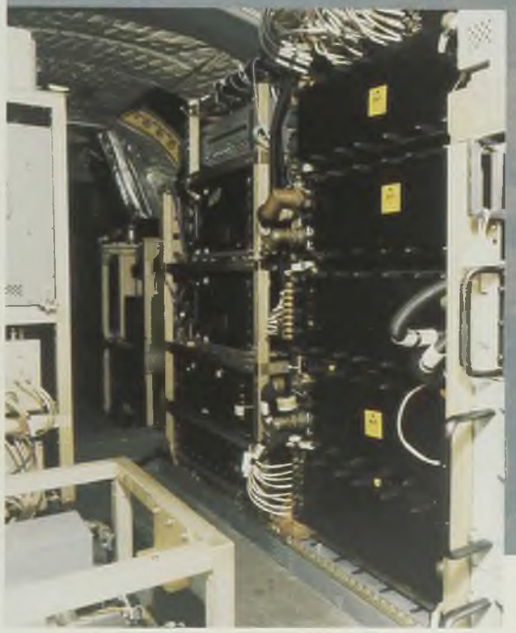
PROGRAM STATUS
Current Continue production of GB devices.

PROJECTED ACTIVITIES
3QFY00 Deliver 400 production GB devices.
4QFY00 Complete GB fielding.

PRIME CONTRACTORS
Boeing (Anaheim, CA)

* See appendix for list of subcontractors

Guardrail/Common Sensor (GR/CS)



MISSION
Provide signals intercept and precision target location of threat communications and noncommunications electronic emitters.

DESCRIPTION AND SPECIFICATIONS
The Guardrail/Common Sensor (GR/CS) is a corps-level, fixed-wing airborne signals intelligence (SIGINT) collection and target location system. The GR/CS system supports corps, division, and joint land force component commanders by detecting, identifying, exploiting, and precisely locating threat communications, radars, and other electronic emitters throughout the corps area of interest. It provides information dominance to the tactical commander.

One GR/CS system is authorized per aerial exploitation battalion in the military intelligence brigade at each corps. A standard system consists of six to twelve RC-12 aircraft that fly operational missions in sets of two or three. Ground processing is conducted in the integrated processing facility (IPF). Interoperable data links provide microwave connectivity between the aircraft and the IPF. The GR/CS provides near real-time SIGINT and targeting information to tactical commanders throughout the corps area via the Joint Tactical Terminal. Key features include:

- Integrated communications intelligence (COMINT) and electronic intelligence (ELINT) collection and reporting
- Enhanced signal classification and recognition
- Near-real-time direction finding
- Precision emitter location
- Advanced integrated aircraft cockpit

Planned product improvements include greater mobility and deployability via smaller "mini-" IPFs and system upgrades to increase GR/CS capability to exploit a wider range of signals. The GR/CS shares technology with the Airborne Reconnaissance Low and other joint systems.

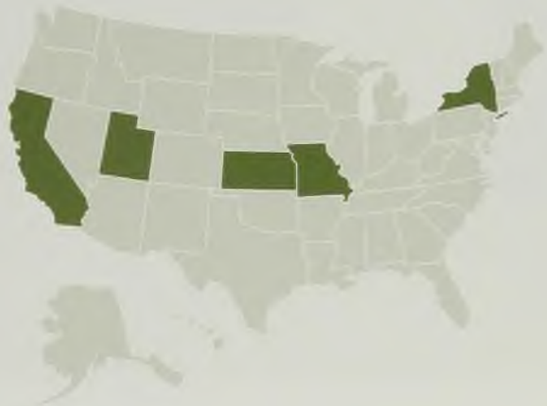
FOREIGN COUNTERPART
Numerous countries possess airborne electronic warfare systems, but none achieve the direction-finding accuracy of the Guardrail system.

FOREIGN MILITARY SALES
None

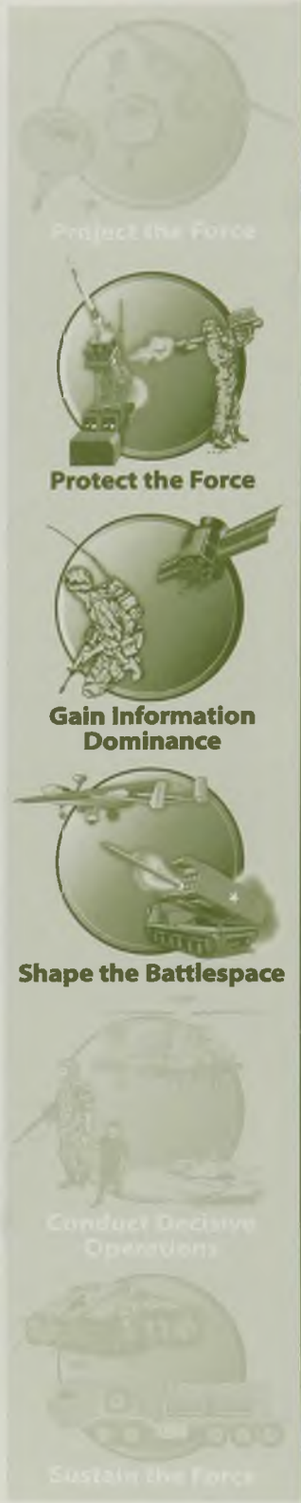
PROGRAM STATUS
- Field interoperable subsystems to GR/CS Systems 1, 2, and 4.
- Complete ground relay facility development and fielding to GR/CS System 3 in Korea.
- Install dual use applications program into System 1 at the 224th MI Battalion.

PROJECTED ACTIVITIES
- Complete and field Tactical Information Broadcasting System (TIBS) upgrades to GR/CS systems 1, 3, and 4.
- Complete Air Force interoperability upgrade to GR/CS Systems 1, 3, and 4.
- Initiate reporting upgrade fielding.
- Begin mini-IPF engineering design.
- Field GR/CS System 2.
- Field System 4 remote relay capability.

PRIME CONTRACTORS
Raytheon (Wichita, KS); TRW (Sunnyvale, CA); Systems and Electronics (St. Louis, MO); L3Communications (Salt Lake City, UT); Lockheed Martin (Owego, NY)



* See appendix for list of subcontractors



Integrated Meteorological System (IMETS)

UNITED STATES ARMY

Integrated Meteorological System (IMETS)

Information Dominance

MISSION

Provide commanders at all echelons with an automated tactical weather system that receives, processes, and disseminates weather observations, forecasts, battlefield visualization, and weather effects decision aids to all Army Tactical Command and Control System (ATCCS) battlefield functional areas (BFAs).

DESCRIPTION AND SPECIFICATIONS

The Integrated Meteorological System (IMETS) is the weather component of the intelligence electronic warfare (IEW) subelement of the Army Battle Command System (ABCS). The Block II IMETS is a tactical automated weather system mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). It provides automation and communications support to Air Force combat weather teams assigned to the Army at echelons-above-corps down to aviation battalions and to Army Special Operations forces.

IMETS receives weather information from polar-orbiting civilian and defense meteorological satellites, civilian forecast centers, the Air Force Weather Agency, artillery meteorological sections, and remote sensors. IMETS processes and collates forecasts, observations, and climatological data to produce timely and accurate weather products tailored to the specific warfighter's needs. The most significant weather and environmental supports to warfighters are the automated tactical decision aids. These graphics display the impact of the weather on current or planned operations for both friendly and enemy forces. This allows the warfighter to more effectively employ his forces and weapons systems to achieve success in battle.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

- Replaced 15 non-Y2K compliant IMETS Block I systems with Y2K-compliant IMETS.
- Redirected IMETS in response to the Operational Requirements Document and realigned with the Air Force reengineering initiative. Requires three separate configurations of IMETS: HMMWV-mounted, command post, and light.
- Continued development of light version of the weather effects workstation, which complements the Air Force Weather Agency's new tactical forecaster workstation.

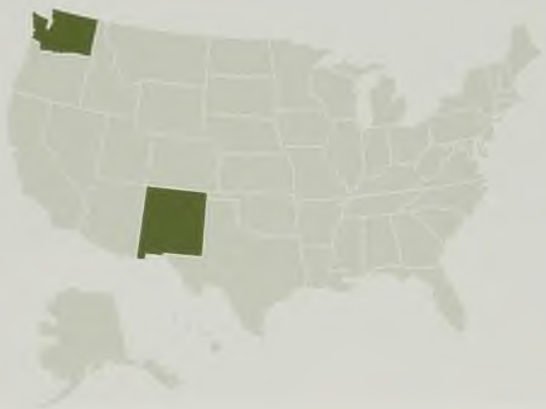
PROJECTED ACTIVITIES

FY00 Field seven HMMWV-mounted IMETS.
FY01 Field seven HMMWV-mounted IMETS.
FY02 Develop and initiate fielding of 16 light configurations.

Equip the increased number of Air Force combat weather teams identified by the Air Force to better support Army weather requirements.
FY03 Develop and initiate fielding of nine command post configurations.

PRIME CONTRACTORS

Logicon (Tacoma, WA); Physical Sciences Laboratory, New Mexico State University (Las Cruces, NM)



* See appendix for list of subcontractors

Integrated System Control (ISYSCON)

UNITED STATES ARMY

MISSION
Provide an automated, theater-wide system that signal units can use to manage multiple tactical communications systems and networks in support of battlefield operations.

DESCRIPTION AND SPECIFICATIONS
The Integrated System Control (ISYSCON) facility is a centralized network management solution that satisfies shortfalls identified in this area during Operation Desert Storm and other recent deployments. The ISYSCON facility will:

- Provide an automated capability for managing the tactical communications network;
- Establish an interface with each technical control facility in the Army Battle Command System (ABCS) architecture; and
- Enable automation-assisted configuration and management of a dynamic battlefield.

The ISYSCON program utilizes the Battlefield Spectrum Management (BSM) software developed by the Department of Defense (DoD) Joint Spectrum Center (JSC) for frequency management, assignment, and allocation. The BSM software has been designated as a part of the migration system for DoD-wide use.

An ISYSCON V(1) node consists of a standard integrated command post system (SICPS) shelter on an expanded capacity vehicle, High Mobility Multipurpose Wheeled Vehicle (HMMWV), two extension tents, two server and four client workstations, and peripherals. Signal S-3 staffs will use ISYSCON to manage Army and Joint Task Force tactical battlefield information systems for both deployed and split-based operations.

The ISYSCON program supports future network management initiatives related to the evolution of the digitized division and the Warfighter Information Network (WIN) architecture. ISYSCON V(4) (tactical internet manager) will manage the tactical internet at brigade and battalion levels. ISYSCON will provide centralized control of the data networks that interconnect all command and control systems and all weapon systems on the battlefield.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
4QFY92 Awarded ISYSCON contract to GTE Government Systems.
3QFY95 Approved to enter low-rate initial production.
1QFY99 Conducted initial operational test and evaluation to test phase I echelons at corps and below capability.
2QFY99 Milestone III decision approved.

PROJECTED ACTIVITIES
3QFY00 Scheduled phase 2 limited user test.

PRIME CONTRACTORS
General Dynamics (Taunton, MA; Raleigh, NC)

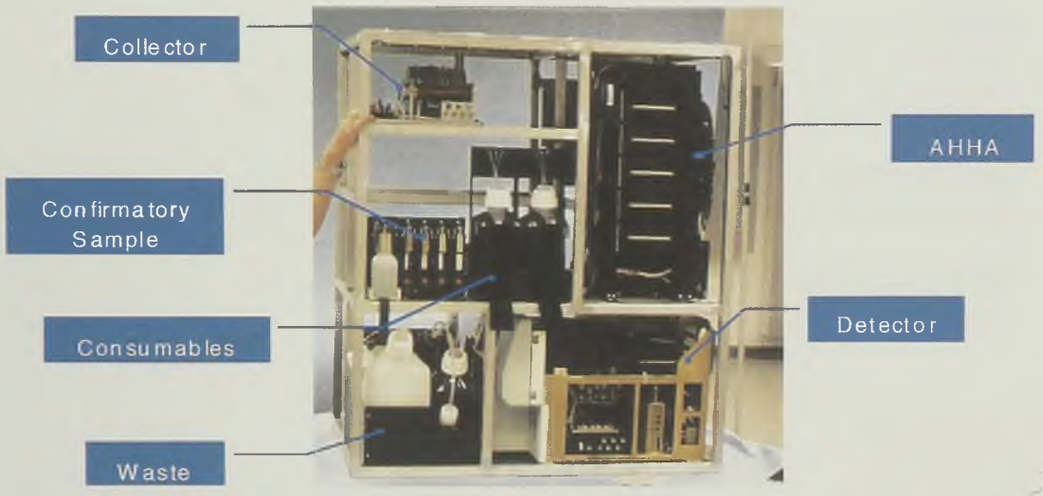
* See appendix for list of subcontractors

Joint Biological Point Detection System (JBPDS)

JPO - BioDefense

PRODUCT MANAGER - JOINT BIOLOGICAL POINT DETECTION SYSTEM

Basic Bio Suite Unit Integration



Joint Biological Point Detection System (JBPDS)

Information Dominance

MISSION
Automatically detect and identify biological warfare agents.

DESCRIPTION AND SPECIFICATIONS
The Joint Biological Point Detection System (JBPDS) will be installed on vehicles, ships, and at fixed installations to provide biological detection and warning for all service personnel. The JBPDS detects and identifies low-concentration biological warfare agents in less than twenty minutes. The system is fully automated and is compatible with the Joint Technical Architecture (JTA). Ten different biological warfare agents can be identified simultaneously, and a sample of any positive identification is immediately captured by the system for further analysis at designated laboratories.

The JBPDS can be operated remotely out to a distance of five kilometers by hard wire or by radio communication link. More than 30 JBPDSs can be controlled from a single control station. The JBPDS uses a common biological detection suite for various applications under development including: man-portable, shelter-mounted, fixed-site, and shipboard versions. The JBPDS is designed to meet the environmental, shock, and vibration profiles of its intended platforms, as well as requirements for service reliability, availability, and maintainability.

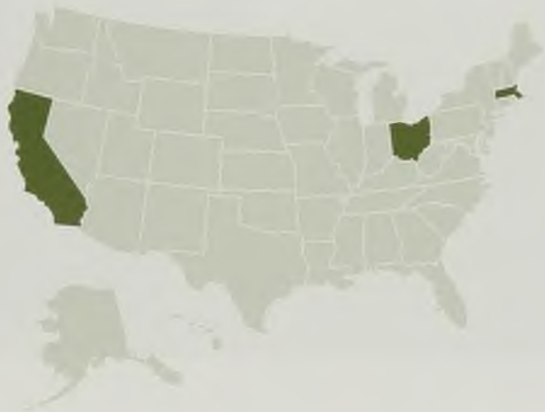
FOREIGN COUNTERPART
Canadian Integrated Biological Agent Detector System

FOREIGN MILITARY SALES
None

PROGRAM STATUS
FY99 Conducted engineering development tests.

PROJECTED ACTIVITIES
FY00 Fabricate JBPDS for pre-production qualification testing/operational evaluation.
4QFY00 Scheduled contract award for low-rate initial production.
FY01 Complete initial operational test and evaluation.
4QFY01 Begin full-rate production and fielding.

PRIME CONTRACTORS
Lockheed Martin (Glendale, CA); Battelle (Columbus, OH); MIT Lincoln Laboratories (Lexington, MA)



* See appendix for list of subcontractors

Joint Chemical Agent Detector (JCAD)

MISSION
Provide local detection and warning of chemical agents, early warning of the presence of chemical agents, rapid-alarm response indication to high-concentration exposure; determine decontamination requirements for vehicles, equipment and personnel; and monitor terrain during chemical surveys.

DESCRIPTION AND SPECIFICATIONS
Joint Chemical Agent Detector (JCAD) a multi-mission, chemical-agent, point-detection system currently in development for the U.S. military. JCAD will detect, identify, quantify, and report the presence of nerve, blister, and blood agents. JCAD will also provide real-time detection and identification of toxic industrial chemicals. Equipped with a cumulative dosimeter, JCAD will be capable of accumulating and reporting miosis-level cumulative concentrations of one chemical agent, while still providing a rapid alarm response indication to a high concentration exposure from a different agent.

JCAD will store up to 72 hours of cumulative dosages and chemical alarms in its on-board memory for hazard level reporting, later playback, or download. JCAD's surface contamination survey instrument will pre-sort vehicles, equipment, and personnel to determine decontamination requirements and verify the completion of decontamination. It will also be utilized to monitor terrain during chemical surveys.

JCAD will be handheld or worn in a pouch that attaches to a warfighter's load bearing equipment. The JCAD will also be installed in military ground vehicles, aircraft, naval ships, and military installations.

JCAD interfaces to the user with a digital/graphic liquid crystal display, and a user-selectable audio and/or LED alarm. JCAD also provides for external data interface via an RS-232 port. Communication protocol complies with the Joint Technical Architecture and the Joint Warning and Reporting Network. The JCAD detector unit will weigh less than two pounds (0.9 kg), including the internal battery weight. The JCAD will operate on internal battery power using both rechargeable and non-rechargeable cells. JCAD will also operate under a variety of external power sources. It will operate in a wide range of temperature and altitude conditions and environmental conditions including blowing sand and rain, freezing rain, salt fog, and salt spray.

FOREIGN COUNTERPART
France; AP-2C

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Current Engineering and manufacturing development is ongoing.

PROJECTED ACTIVITIES
FY02 Commence five-year Department of Defense procurement of more than 257,000 JCAD units. JCAD will eventually replace all current U.S. inventory chemical point detection systems.

PRIME CONTRACTORS
BAE Systems (Austin, TX)

* See appendix for list of subcontractors

Joint Collection Management Tools (JCMT)

UNITED STATES ARMY

Joint Collection Management Tools (JCMT)

Information Dominance

MISSION

Provide all-source collection management; permit combat leaders to effectively use collection to answer mission-critical intelligence needs.

DESCRIPTION AND SPECIFICATIONS

Joint Collection Management Tools (JCMT) is the Department of Defense Intelligence Information System (DoDIIS) migration system for all-source collection management. JCMT operates at the sensitive compartmented information (SCI) level and will be used by national, theater, and tactical organizations of all services. JCMT provides tools for recording, organizing, and tracking intelligence collection requirements for all intelligence disciplines. It provides automated support for a collection manager to review selected discipline reporting to determine whether existing data might satisfy the users' information needs.

If acceptable data are not available, JCMT's various databases and platform/sensor models can be queried for data about asset capabilities and availability. This enables a collection manager to determine whether the information needs can be satisfied by existing collection missions or whether new collection is required. JCMT also aids the collection manager in the development of collection plans, along with the generation of requirements nomination messages. A key feature of JCMT is the automated support it provides to a collection manager to ascertain the status of requirements that have been forwarded to other organizations for action.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

3QFY98 Approved for fielding JCMT Capabilities Package (CP) 1.0.
1QFY99 Submitted CP 1.1 to the Joint Interoperability Test Facility (JITF) and Joint Interface Testing Center (JITC) for Y2K testing. JITF testing verified CSE infrastructure compliance, government-off-the-shelf (GOTS)/GOTS integration, Y2K integration. JITC Y2K interoperability test verified JCMT CP1.1 interoperability with AMHS and CSP.
2QFY99 Conducted operational evaluation of CP 1.1 at the National Ground Intelligence Center.
3QFY99 Commenced fielding of CP 1.1; system is currently fielded to 25 server sites worldwide.
4QFY99 Completed development work and government testing on CP 1.1.

PROJECTED ACTIVITIES

- Continue fielding and maintenance of CP 1.1.
- Begin development of a tactical version of JCMT.

PRIME CONTRACTORS

TRW (Fair Lakes, VA)

* See appendix for list of subcontractors

Joint Service Lightweight NBC Reconnaissance System (JSLNBCRS)

UNITED STATES ARMY

MISSION
Provide field unit commanders with real-time point and stand-off intelligence for real-time field assessment of nuclear, biological and chemical (NBC) hazards.

DESCRIPTION AND SPECIFICATIONS
The Joint Lightweight Nuclear Biological Chemical Reconnaissance System (JSLNBCRS) is a nuclear, biological and chemical detection and identification system. It will consist of a base vehicle (BV) equipped with hand-held, portable and mounted, current, and advanced NBC detection and identification equipment [both government-furnished equipment (GFE), non-developmental item (NDI), and parallel development]. The vehicle shall be equipped with collective protection, an overpressure system, environmental control system, auxiliary power supply system, navigation system, meterological data processing system, internal and external communication system, and surface samplers. There will be two variants of the JSLNBCRS: the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the Light Armored Vehicle (LAV).

The JSLNBCRS shall provide on-the-move reconnaissance and surveillance in support of combat, combat support, and combat service support forces. The JSLNBCRS shall provide accurate and rapid NBC intelligence by detecting, sampling, identifying, marking, and reporting the presence of NBC hazards within the unit's area of responsibility.

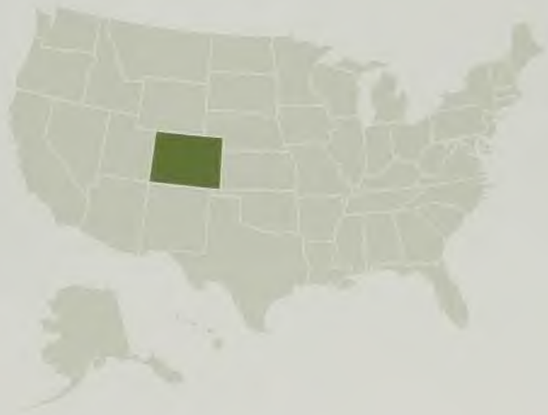
FOREIGN COUNTERPART
China: NBC reconnaissance vehicle; Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH; Germany: ABC Reconnaissance System.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY98 Awarded integration contract for prototype development and integration.
FY99 Initiated concept exploration and program definition and risk reduction phases.

PROJECTED ACTIVITIES
FY01 Award production contract.
4QFY01 Commence first procurement.
FY00–01 Conduct engineering and manufacturing development.
FY01–02 Conduct production and deployment.
FY02 Achieve initial operational capability.
FY06 Achieve full operational capability.

PRIME CONTRACTORS
TRW (Carson, CO)



* See appendix for list of subcontractors

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)

UNITED STATES ARMY

MISSION
Detect the presence of chemically contaminated battle spaces and provide enhanced early warning to joint service forces.

DESCRIPTION AND SPECIFICATIONS
The Joint Service Lightweight Stand-Off Chemical Agent Detector (JSLSCAD) will provide on-the-move detection, identification, mapping, and reporting of nerve, blister, and blood agent vapors. The JSLSCAD can communicate its warning automatically through the Joint Warning and Reporting Network (JWARN). It will provide 360° x 60° coverage, from a variety of tactical and reconnaissance platforms, at distances of up to five kilometers. When avoidance is not possible, the system will give personnel extra time to put on mission-oriented protective posture gear.

Intended applications include various ground-vehicle, aerial, shipboard, and fixed-emplacement platforms such as the following: M93A1 Fox Block II, Light NBC Reconnaissance System (JSLNBCRS), Unmanned Aerial Vehicle (UAV), C130 Aircraft, CH53 Helicopter, ships; and fixed-site installations. The JSLSCAD detector and the operator display unit weigh approximately 48 lb and the power adapter used for shipboard and fixed-site applications weighs approximately 10 lb. The detector is approximately one cubic foot and the total of all three components is approximately one-and-a-half cubic feet.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY98 Initiated engineering, manufacturing, and development program.

Integrated product team formed to develop the test methodology for the JSLSCAD.
1QFY99 Completed preliminary design review.
3QFY99 Completed detailed design review.
4QFY99 Initiated fabrication of engineering design test (EDT) units.

PROJECTED ACTIVITIES
1QFY00 Conduct critical design review.
2QFY00 Complete fabrication of EDT units.
2–4QFY00 Conduct EDT.

PRIME CONTRACTORS
Intellitec (Deland, FL)

* See appendix for list of subcontractors

Joint Surveillance Target Attack Radar System (Joint STARS) Common Ground Station (CGS)

UNITED STATES ARMY

Joint Surveillance Target Attack Radar System (Joint STARS) Common Ground Station (CGS)

Information Dominance

MISSION

Provide long-range radar and other sensor surveillance battle management and targeting data to tactical commanders.

DESCRIPTION AND SPECIFICATIONS

The Joint Surveillance Target Attack Radar System (Joint STARS) Common Ground Station (CGS) is a joint Air Force/Army program. The airborne platform is a United States Air Force E-8 with a multi-mode radar (wide-area surveillance and synthetic aperture modes), 18 operation-and-control consoles, a surveillance and control data link (SCDL), and secure communications. Orbiting a safe distance from the forward line of troops (FLOT), Joint STARS radar scans a wide area of the battlefield.

The radar data is received by Air Force and Army operators aboard the aircraft and downlinked to multiple CGSs via the SCDL. The information provides tactical commanders with near-real-time, wide-area surveillance, and deep-targeting data. The Joint STARS system can detect, locate, and assist in attacking both fixed and moving targets beyond the FLOT during daylight and darkness in nearly all weather conditions.

The CGS is a mobile, tactical, multi-sensor ground station that receives, displays, processes, and disseminates targeting, battle management, and intelligence information to all echelons. In addition to Joint STARS radar data, the CGS is capable of receiving and displaying Airborne Reconnaissance Low (ARL) radar data, Unmanned Aerial Vehicle imagery, and signals intelligence data via an integrated joint tactical terminal. The CGS uses commercial off-the-shelf components, and is housed in a shelter on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). The CGS provides increased functionality over the predecessor Ground Station Module (GSM), which it replaced in FY99. The CGS will be a key node on the digitized battlefield, receiving multiple national, theater, and tactical sensor inputs.

FOREIGN COUNTERPART

Britain: Astor, France: Horizon, Italy: Creso.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

1QFY96 Awarded CGS production contract.
2QFY97 Completed fielding of 16 MGSMs and 4 LGSMs.
3QFY99 Began initial fielding of CGS.
FY99 Completed replacement of all GSMs.

PROJECTED ACTIVITIES

2QFY00 Conduct final phase of operational testing.
4QFY00 CGS full-rate production decision (milestone III).
FY00 Continue fielding.

Begin initial deliveries of the Version 2 preplanned production improvement CGS.

Begin retrofit of Version 1 CGS to Version 2 configuration.

PRIME CONTRACTORS

CGS: Motorola (Scottsdale, AZ)
Datalink: CUBIC Defense Systems (San Diego, CA)
Aircraft: Northrop Grumman (Melbourne, FL)

* See appendix for list of subcontractors

Joint Tactical Ground Station (JTAGS)

Joint Tactical Ground Station (JTAGS)

Information Dominance

MISSION

Provide theater commanders with real-time, space-based infrared warning, alerting and cueing information on theater ballistic missiles (TBMs) and other tactical events.

DESCRIPTION AND SPECIFICATIONS

The Joint Tactical Ground Station (JTAGS) is a transportable information processing system that receives and processes in-theater, direct, downlinked data from Defense Support Program (DSP) and follow-on Space-Based Infrared System (SBIRS) satellites. JTAGS disseminates warning, alerting, and cueing information on theater ballistic missiles and other tactical events throughout the theater, using existing communications networks.

A JTAGS unit consists of a standard 8' x 8' x 20' shelter with mobilizer, external collapsible high-gain antennas, standard military generator, and standard five-ton trucks as prime movers. JTAGS can be deployed worldwide; the system is transportable by C-141 aircraft and can be made operational within hours. For redundancy during contingency situations, the system will deploy in pairs. During crisis situations, the system will conduct joint operations. JTAGS Phase I upgrades provide Joint Tactical Information Distribution System (JTIDS) integration and data fusion with other sensors. The Phase II preplanned product improvements (P3I) upgrades JTAGS to the SBIRS common Multi-Mission Mobile Processor (M3P). A memorandum of agreement between the Army and Air Force program executive offices implemented the joint program development of the SBIRS M3P between the Army JTAGS Product Office and the Air Force SBIRS System Program Office.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

JTAGS is an acquisition category III joint interest program (Army and Air Force) under the Program Executive Office Air and Missile Defense.

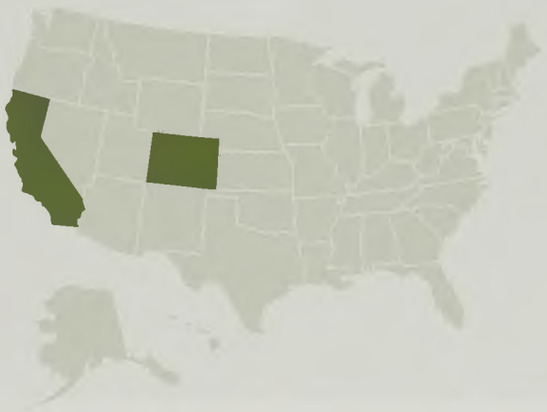
FY97 Fielded five production units to the European Command (EUCOM), Pacific Command (PACOM), and Army Space Command Continental United States (CONUS).
FY97 Initiated JTAGS P3I phase I.
4QFY98 Initiated P3I phase II JTAGS M3P upgrade. SBIRS upgrade, which converts JTAGS into M3Ps, will be developed jointly by the Army and Air Force to accomplish theater and strategic missions.
4QFY99 Completed P3I phase I upgrades: sensor fusion and Joint Tactical Information Distribution System JTIDS integration testing 4QFY99 (certification pending).
1QFY00 Phase I upgrade fielding approval decision.

PROJECTED ACTIVITIES

2–4QFY00 Field phase I upgrades.
4QFY00 Conduct phase II upgrade critical design review.
4QFY01 Conduct phase II M3P initial theater testing.

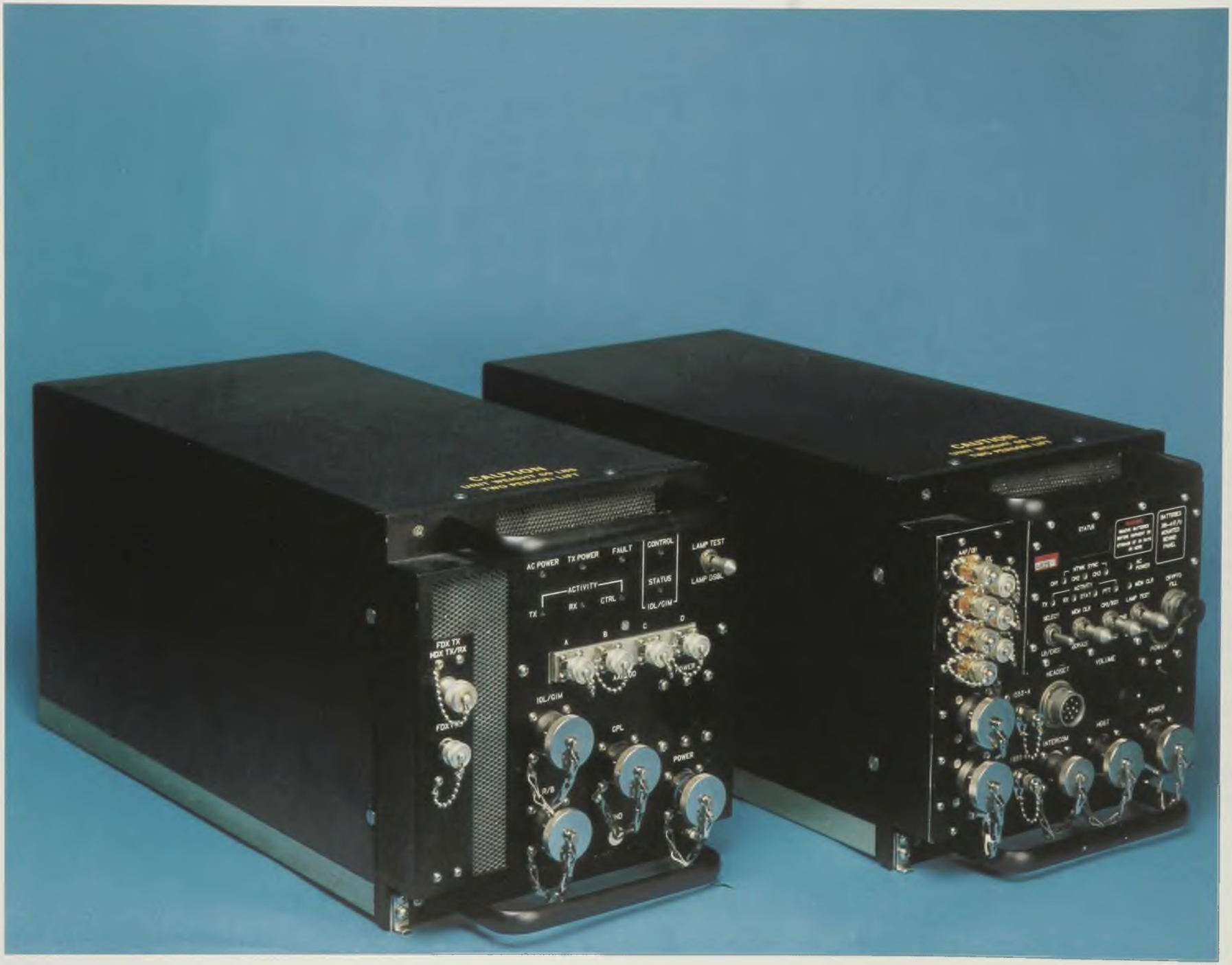
PRIME CONTRACTORS

Deployment, Production, and Phase I, P3I: GenCorp (Aerojet) (Azusa, CA; Colorado Springs, CO)
Phase II P3I: Lockheed Martin (Sunnyvale, CA; Boulder, CO); GenCorp (Aerojet) (Azusa, CA)



* See appendix for list of subcontractors

Joint Tactical Terminal (JTT)



Joint Tactical Terminal (JTT)

Information Dominance

MISSION

Provide the joint warfighter with seamless, near-real-time tactical intelligence, targeting, and situational awareness information.

DESCRIPTION AND SPECIFICATIONS

The Joint Tactical Terminal (JTT) provides the critical data link to battle managers, intelligence centers, air defense, fire support elements, and aviation nodes across all services. The JTT enables Army, Air Force, Navy, Marine Corps, and other agency users to exploit current intelligence broadcast networks and, through preplanned product improvements, will support the evolving IBS Broadcast Architecture. JTT supports the following intelligence networks:

- Tactical Reconnaissance Intelligence Exchange Service (TRIXS)
- Tactical Information Broadcast Service (TIBS)
- Tactical Related Applications Data Dissemination System (TDDS)
- Tactical Data Information Exchange System-B (TADIXS-B)
- Secondary Imagery Dissemination (SIDS)
- Integrated Broadcast Service (IBS) Architecture

In addition to receiving intelligence data, JTT provides data provider or relay functions. The JTT can be integrated into systems on vehicles, aircraft, ships, and fixed sites. There is also a reduced-size, stand-alone briefcase JTT-B variant of the baseline JTT/CIBS-M. The JTT-B has a built-in laptop computer that provides terminal control and network display.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

Sales to the United Kingdom, Australia, and Canada are planned.

PROGRAM STATUS

4QFY97 Awarded contract for 132 JTTs.
3QFY98 Awarded options for 95 JTTs.
3QFY99 Awarded options for 85 JTTs and 16 JTT-Bs. Current distribution: Army (201), Navy (51), the Air Force (44), U.S. Marine Corps (12), Operational Support Office (8), National Security Agency (5), and other organizations (5).

PROJECTED ACTIVITIES

3QFY00 Conduct user demonstration.
3QFY00 Begin JTT deliveries.
2QFY01 Begin JTT-B deliveries.
2QFY01 Multi-service operational test and evaluation scheduled.
3QFY01 Milestone III production decision.

PRIME CONTRACTORS

JTT and JTT-B: Raytheon (St. Petersburg, FL)

* See appendix for list of subcontractors

Project the Force

Protect the Force

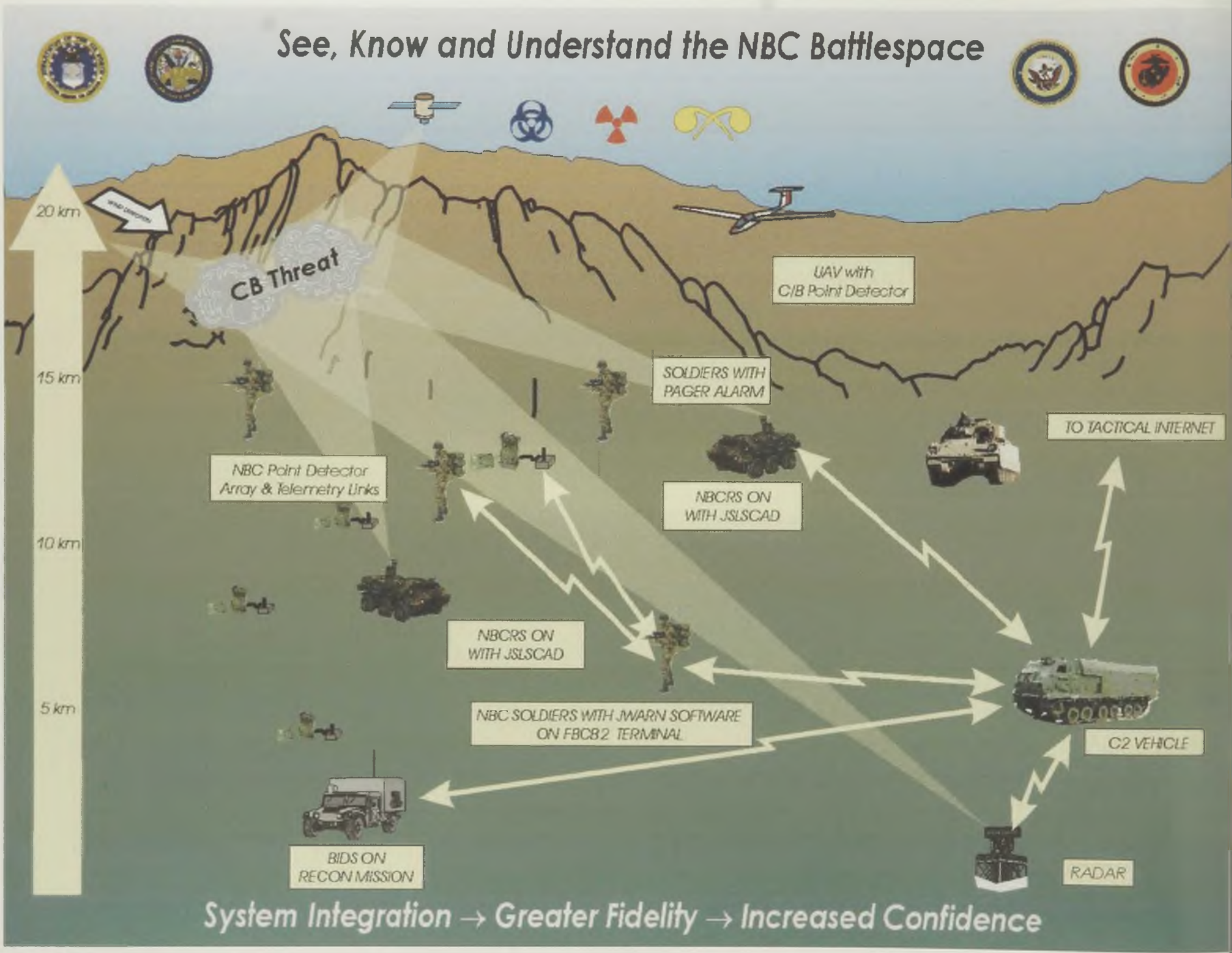
Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Sustain the Force

Joint Warning and Reporting Network (JWARN)



MISSION
Provide the joint forces with the capability to report, analyze, and disseminate nuclear, biological, and chemical (NBC) agent detection, identification, location and warning information; and accelerate the warfighter's response to an enemy NBC attack.

DESCRIPTION AND SPECIFICATIONS
The Joint Warning and Reporting Network (JWARN) system is a U.S. Marine Corps-led program with full participation by the Army, Navy, and Air Force. The JWARN system employs NBC-warning technology to collect, analyze, identify, locate, report, and disseminate information on NBC threats. JWARN software and hardware will be compatible and integrated with joint service command, control, communications, computer, and intelligence information (C4I2) systems. JWARN will be located in command and control centers and will be employed in making decisions about warning dissemination down to the lowest level on the battlefield. JWARN will provide additional data processing, as well as plan and report production and access to specific NBC information, all of which will improve the efficiency of NBC defense personnel assets.

The system has a three-block acquisition approach:

Block I: Non-developmental item (NDI)/commercial off-the-shelf (COTS)/government off-the-shelf (GOTS) products to standardize warning and reporting.

Block II: Provide the total JWARN capability, by integrating NBC detector systems, warning and reporting software modules, and battlefield management software modules into the services' C4I2 systems.

Block III: Preplanned product improvement will include artificial intelligence modules for NBC operations, an upgrade to match future C4I2 systems, and standard interfaces for use with future detectors.

FOREIGN COUNTERPART
The BRACIS (Biological, Radiological and Chemical Information System) software system has been developed for the United Kingdom Armed Forces. BRACIS is a system for computerized NBC hazard prediction and warning, in accordance with the North Atlantic Treaty Organization (NATO) standard ATP-45 (A).

FOREIGN MILITARY SALES
None

PROGRAM STATUS
1QFY98 JWARN milestone III approval for block I.
Current Completed fielding of the COTS NBC analysis software pack and GOTS models.

Integrate COTS software (with battlefield management functionality) with the Maneuver Control System (MCS) and into the Windows 32-bit environment.

PROJECTED ACTIVITIES
2QFY00 Begin scheduled follow-on development (phase III, overlapping with phase II). Phase III will upgrade JWARN communications and software to work with the next generation of detectors by FY04.

PRIME CONTRACTORS
Block I: Bruhn NewTech (Columbia, MD)
Block II: To be determined

* See appendix for list of subcontractors

Kiowa Warrior

UNITED STATES ARMY

MISSION
Conduct armed reconnaissance/security, target acquisition/designation, command and control, light attack, and air combat (defensive) missions in support of combat and contingency operations.

DESCRIPTION AND SPECIFICATIONS
The Kiowa Warrior is the rapidly deployable, lightly armed reconnaissance aircraft for the Army. The OH-58D includes advanced visionics, navigation, communication, weapons, and cockpit integration systems. The OH-58D Mast-Mounted Sight houses a thermal imaging system, low-light television, and a laser rangefinder/designator. These systems allow target acquisition and engagement at stand-off ranges and in adverse weather conditions. The Kiowa Warrior's highly accurate navigation system provides precise target location that can be handed off to other aircraft or artillery via its digital communications system. Battlefield imagery can be transmitted to provide near-real-time situational awareness to command and control elements. The Kiowa Warrior can be rapidly and easily deployed and, upon arrival, placed into operation within minutes. The armament systems combine to provide anti-armor, anti-personnel, and anti-aircraft capabilities at stand-off ranges.

Max gross weight: 5,500 lb
Max speed: 118 kt, clean; 113 kt, armed
Crew: 2
Armament: ATAS (2 round launcher); .50 caliber machine gun; HYDRA 70 (2.75 in) rockets (7-shot pod); HELLFIRE missiles (2 round launcher).

FOREIGN COUNTERPART
France: Gazelle, Allouette; Germany: BO-105; Russia: Hind, Hip, Hoplite.

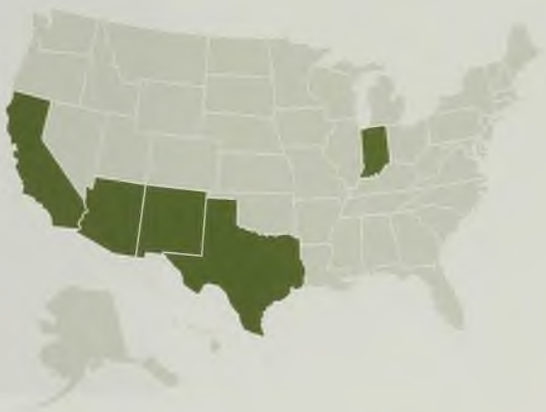
FOREIGN MILITARY SALES
Taiwan: Delivery of 26 Kiowa Warriors completed. Thirteen additional aircraft requested as amendment to the existing foreign military sales case.

PROGRAM STATUS
2QFY99 Completed OH-58D retrofit program.
1QFY00 A total of 387 aircraft have been fielded. Aircraft are located at training bases and operational units worldwide. Bell Helicopter Textron is modifying the first lot of 28 aircraft as part of the OH-58D Safety Enhancement Program (SEP). The SEP will upgrade the entire Kiowa Warrior fleet with improved engines, crashworthy seats, cockpit airbags, and a digitized mission equipment package.

PROJECTED ACTIVITIES
FY00 Complete OH-58D Kiowa Warrior production in FY00 after 15 years in production.

Twenty-eight aircraft are scheduled for the SEP upgrade.
FY06 The RAH-66 Comanche fielding will begin to displace Kiowa Warriors from the Active Army to the National Guard. The Kiowa Warrior will remain in service past FY20.

PRIME CONTRACTORS
Rolls Royce/Allison Engines (Indianapolis, IN); Honeywell (Albuquerque, NM); Textron (Fort Worth, TX); Boeing (Anaheim, CA); Simula (Tempe, AZ)



* See appendix for list of subcontractors

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)

UNITED STATES ARMY

MISSION

The Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED) is a programmable input/output device used for composing, editing, transmitting, receiving, and displaying alphanumeric and graphic messages for transmission over standard military radios. Forward Observer System (FOS) software enables users to plan, control, and execute fire support operations at maneuver platoon, company battalion, and brigade levels.

DESCRIPTION AND SPECIFICATIONS

The LFED/FED is an integral part of the digitized system architecture. It provides the vital sensor-to-shooter link required for effective fires. The LFED/FED also provides critical situational awareness for forward deployed field artillery units. It provides the initial digital entry device required for forward observers and combat observation lasing teams.

The LFED/FED program provides the hardware platform to support Department of Defense mandated interoperability/Army digitization requirements (to include implementation of Military Standard-188-220A protocol and variable message format) to support the new functional user requirements under the next software release and command, control, communications, computers and Intelligence (C4I) technical architecture requirements. It is used in the heavy divisions by the forward observer, field artillery battery commanders, and fire support team personnel.

FOREIGN COUNTERPART

United Kingdom: Data Entry Device (DED)

FOREIGN MILITARY SALES

None

PROGRAM STATUS

2QFY99 First unit equipped (FUE) with Forward Observer Command and Control.
Final qualification test (FQT)–FOS.
4QFY99 Materiel release of FOS.
FUE with FOS.
FY00 First digitized division (FDD) fielding of FOS.
1QFY00 10th Mountain Division field test of voice recognition.

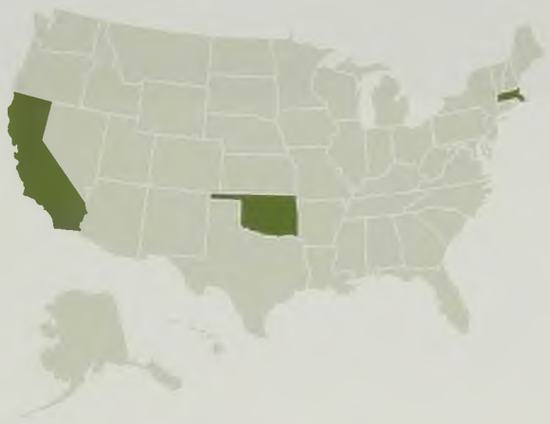
PROJECTED ACTIVITIES

3QFY00 FQT of Package 12.
4QFY00 Materiel release of Package 12.
FQT of Package 13.
ATLANTICA (Joint Readiness Training Center).
1QFY01 Materiel release of Package 13.
3QFY01 Digital capstone exercise (DCX-1).

PRIME CONTRACTORS

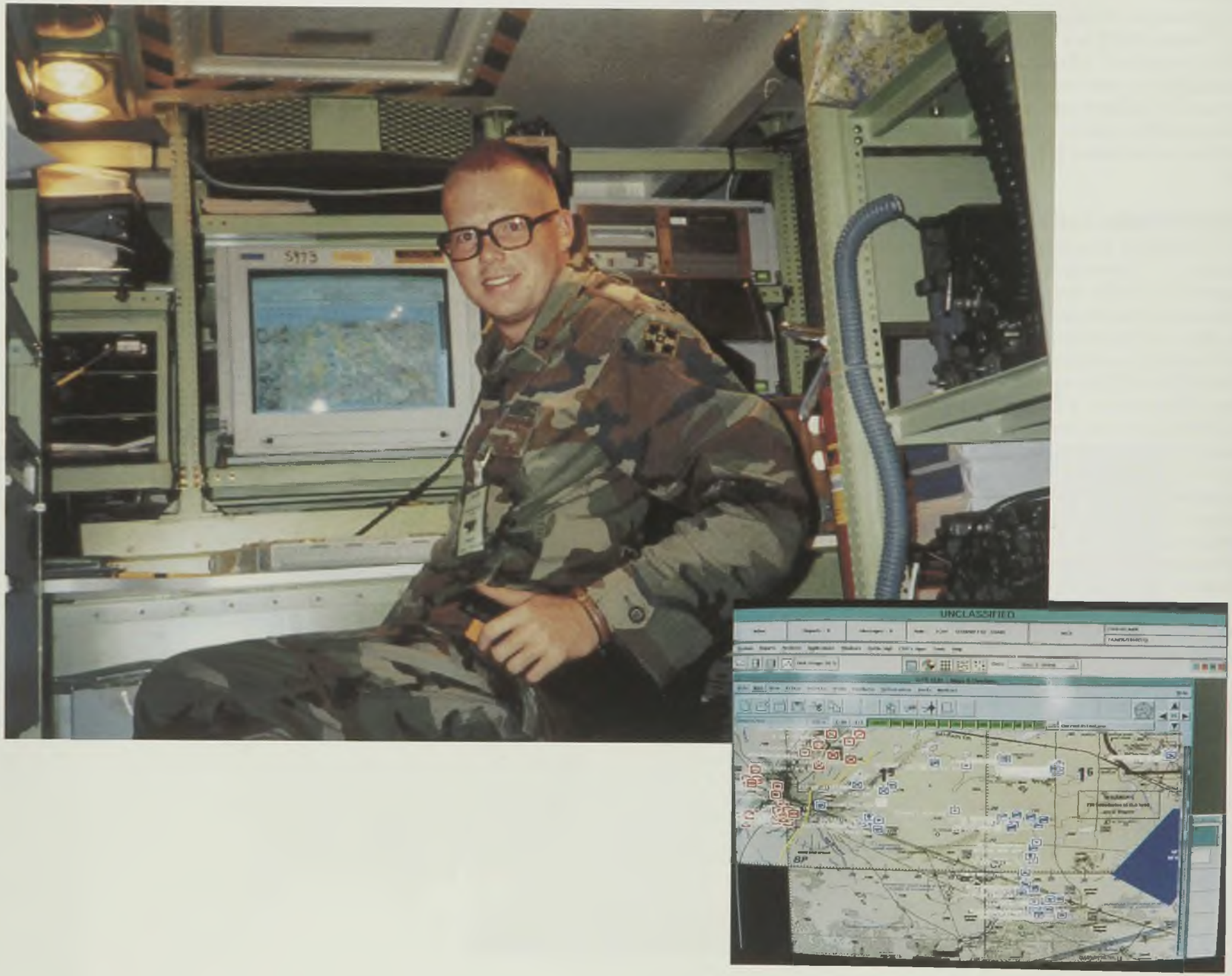
Hardware: Common Hardware Systems (CHS) II Handheld Terminal Unit (HTU) and CHS
- General Dynamics (Taunton, MA); Litton (San Diego, CA)

Software:
- TELOS (Lawton, OK)



* See appendix for list of subcontractors

Maneuver Control System (MCS)



MISSION
Provide automated, online, near-real-time capability for planning, coordinating, monitoring, and controlling tactical operations.

DESCRIPTION AND SPECIFICATIONS
The Maneuver Control System (MCS) automates the creation and distribution of the common tactical picture of the battlefield, as well as creates and disseminates operations plans and orders for combined arms maneuver commanders. MCS integrates battle information from other battlefield functional area (BFA) command and control systems to provide timely, accurate status information, as well as situational awareness for the Army Battle Command System (ABCS).

MCS Block IV software has as its foundation the Defense Information Infrastructure Common Operating Environment (DII COE) software and will be compliant with the Joint Technical Architecture (JTA). MCS software will also evolve to ABCS. MCS will be fielded on common hardware and will implement a client/server architecture.

FOREIGN COUNTERPART
The MCS is designed to interoperate with the respective command and control systems of the United Kingdom, Germany, France, Italy, and Canada. The implementation is based upon North Atlantic Treaty Organization (NATO) and Australia, Britain, Canada, and America (ABCA) agreements and therefore is extendible to other coalition partners.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
4QFY96 Awarded contract for MCS Block IV software development to produce the software for the first digitized division (FDD) in FY00 and the first digitized corps (FDC) in FY04.
3QFY98 Conducted initial operational test and evaluation (IOT&E) of MCS Block III Version 12.01.
Current Block III currently being used by the training school for leader development and evolution of digitized doctrine.

Block IV currently focused on producing Version 6.0 to be used in support of the Force XXI Brigade and Below (FBCB2) limited user test and Version 6.2 for use in the follow-on MCS IOT&E (FY02) and the FBCB2 IOT&E (FY02).

PROJECTED ACTIVITIES
- Continue development of MCS Block IV software for the FDD and FDC.
- Continue Advanced Warfighting Experiment participation.
- Conduct Block IV IOT&E in FY02 with subsequent milestone III decision.

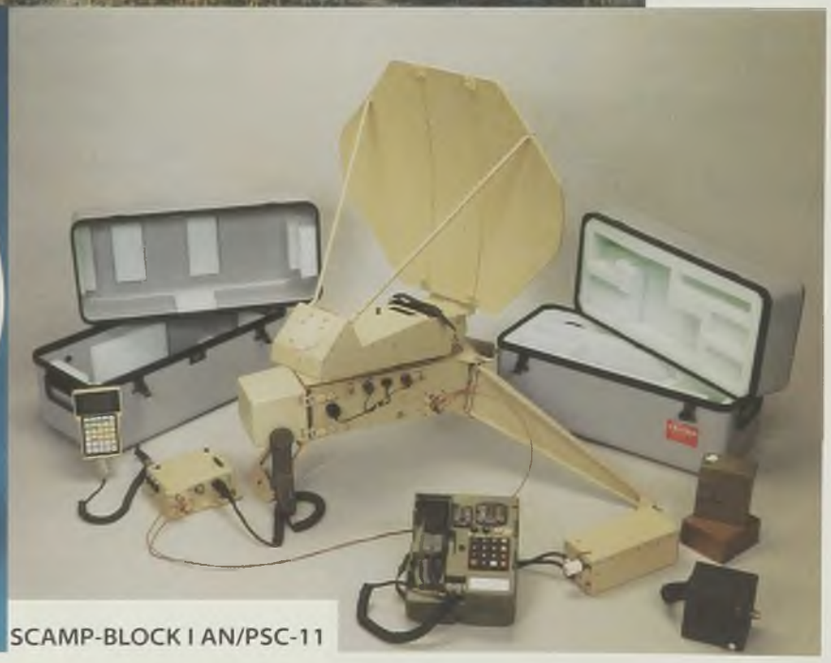
PRIME CONTRACTORS
Block IV Software: Lockheed Martin (Tinton Falls, NJ)
High Capacity Computer Unit: General Dynamics (Taunton, MA)

* See appendix for list of subcontractors

Military Satellite Communications (MILSATCOM)–EHF

SMART-T AN/TSC-154

SCAMP II



SCAMP-BLOCK I AN/PSC-11

MISSION

Achieve end-to-end connectivity to satisfy Joint Chiefs of Staff command, control, communications, computers, and Intelligence (C4I), supporting the National Command Authority, commanders-in-chief, military departments, and other departments and agencies of the government.

DESCRIPTION AND SPECIFICATIONS

Military Satellite Communications (MILSATCOM) includes satellite terminals, satellite control subsystems, communications subsystems, and all related equipment. MILSATCOM projects consist of the following:

Extremely High Frequency (EHF) Milstar Satellite Program. This program provides worldwide, two-way, anti-jam, low-probability-of-intercept detection, secure voice, teletype, and data communications through all levels of conflict and crisis.

Milstar. Milstar provides a seamless communications capability to meet the Force Projection Army's requirement for critical operational communications. Its range-extension capability is interoperable with all services and other satellite and ground systems, and provides assured communications to the warfighting commander. The terminals are capable of rapid setup and tear-down and provide uninterrupted, secure communications for tactical forces, even under harsh electromagnetic conditions.

SMART-T. The SMART-T, mounted on a standard High Mobility Multipurpose Wheeled Vehicle (HMMWV), provides range extension for the Army's Mobile Subscriber Equipment (MSE) system at echelons corps and below. It processes data and voice communications at both low data rate (LDR) and medium data rate (MDR) (75 bps–1.544 Mbps).

SCAMP. The SCAMP is a manportable, battery-powered terminal that provides LDR secure voice at 2400 bps and secure data at 75–2400 bps. Development is underway for technologies leading to an objective SCAMP Block II 12–15 lb manpackable terminal.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

SCAMP:
1QFY99 Completed final operational test and evaluation (FOTE).
2QFY00 First unit equipped.

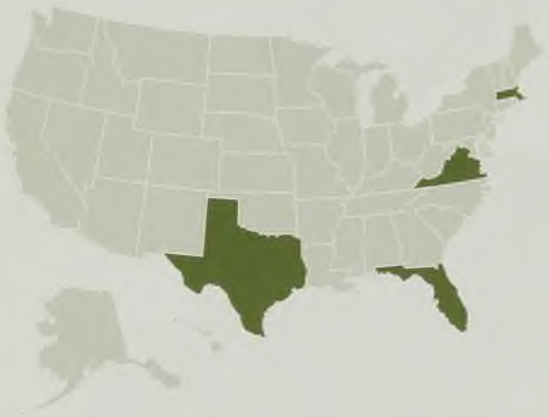
SMART-T:
2QFY99 In full-rate production phase.
FY99 Fielding to critical units.

PROJECTED ACTIVITIES

SMART-T:
1QFY01 FOTE scheduled.

PRIME CONTRACTORS

SCAMP BLOCK I: Rockwell Collins (Richardson, TX)
SCAMP BLOCK II: Lincoln Labs (Lexington, MA)
SMART-T: Raytheon (Marlborough, MA; Virginia Beach, VA; Largo, FL)



* See appendix for list of subcontractors

SPITFIRE

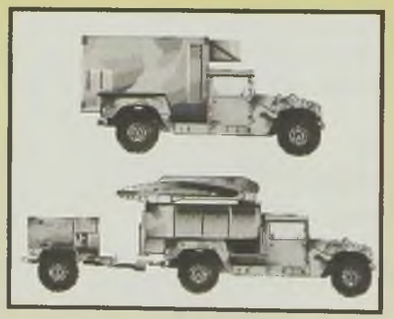
MILSAT

STAR-T

GBS

(Global Broadcast Service)

Receive Terminal (RT)



Theater Injection Point (TIP)

GBS

MISSION

Achieve end-to-end connectivity to satisfy Joint Chiefs of Staff command, control, communications, computers, and intelligence (C4I), supporting the National Command Authority, commanders-in-chief, military departments, and other departments and agencies of the government.

DESCRIPTION AND SPECIFICATIONS

Military Satellite Communications (MILSATCOM) includes satellite terminals, satellite control subsystems, communications subsystems, and all related equipment. MILSATCOM projects consist of the following:

Ultra High Frequency (UHF), Super High Frequency (SHF), and Commercial C and Ku Band Tactical Satellite (TACSAT) programs. These programs provide the reach-back capability between the forward deployed force and the Continental United States sustaining base required to support power projection.

TACSAT. The AN/PSC-5 Spitfire UHF Manpack Terminal supports Army, Air Force, Marine Corps, and Special Operations Forces (SOF) use of Fleet Satellite/Air Force Satellite/UHF follow-on satellites. The Spitfire has embedded communications security and demand-assigned, multiple-access capability, and will replace the existing inventory of single-channel satellite communications radios.

For **SHF Tactical Satellite (TACSAT) Terminals**, the SHF Tri-Band Advanced Range Extension (STAR-T) terminal is mounted in a heavy High Mobility Multipurpose Wheeled Vehicle, and will selectively replace the aging fleet of AN/TSC-85B/93B TACSAT terminals at echelons corps and above. The terminal provides Tri-Band (C and Ku bands in addition to the existing DSCS, X-Band) communications capability for split-based operations; and it has an integrated switch to interface with commercial and joint military switching systems.

GBS. Global Broadcast Service (GBS) is an integrated communications system that provides users worldwide with a one-way, high-speed information flow of high-volume, multi-media information, including imagery, maps, weather data, logistics, air tasking orders, and other data. GBS will transmit up to 24 Mbps on each of four transponders on the Navy's UFO 8, 9, and 10 satellites. Transportable Ground Receiver Suites (TGRS) will receive information from GBS Ka-band or commercial Ku-band transponders. The Theater Injection Point (TIP) will provide commanders-in-chief/the commander of the joint task force with an in-theater uplink transmit capability.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

On July 27, 1998, the National Security Agency (NSA) granted limited approval to sell Spitfires to NATO C3A and Italy. On September 17, 1999 NSA authorized Raytheon to provide a one-time limited direct sale to the Government of Australia of up to ten Spitfires.

PROGRAM STATUS

Spitfire: 2QFY00 Fielded 67 Spitfires to first digitized division. Fielding ongoing.
STAR-T: In low-rate initial production (LRIP). Development test and evaluation is ongoing.
GBS: In LRIP.

PROJECTED ACTIVITIES

Spitfire: Fielding ongoing.
STAR-T:
3QFY00 Conduct initial operational test and evaluation.
4QFY00 Milestone IIIB decision.
1QFY01 Full-scale production contract award.
GBS: 4QFY00 Begin fielding 27 LRIP TGRS to Ft. Hood, TX, and one TIP to the 11th Signal Brigade, Ft. Huachuca, AZ.

PRIME CONTRACTORS

Spitfire: Raytheon (Fort Wayne, IN; Largo, FL)
STAR-T: Raytheon (Marlborough/Sudbury, MA; Largo, FL)
GBS: Raytheon (Reston, VA)

* See appendix for list of subcontractors

Gain Information Dominance

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox

UNITED STATES ARMY

MISSION
Detect, identify, and mark areas of nuclear and chemical contamination; sample for nuclear, biological, and chemical (NBC) contamination; and report accurate information to supported commanders in real time.

DESCRIPTION AND SPECIFICATIONS
The Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–Fox Block I Modification (M93A1) contains an enhanced NBC sensor suite consisting of the M21 RSCAAL, MM1 Mobile Mass Spectrometer, Chemical Agent Monitor/Improved Chemical Agent Monitor (CAM/ICAM), AN/VDR-2, and M22 Automatic Chemical Agent Detector/Alarm (ACADA). The NBC sensor suite has been digitally linked with the communications and navigation subsystems by a dual-purpose central processor system known as the Multipurpose Integrated Chemical Agent Detector (MICAD). The MICAD processor fully automates NBC warning and reporting functions and provides the crew commander with full situational awareness of the Fox's NBC sensors, navigation, and communications systems. The M93A1 Fox is also equipped with an advanced position navigation system Global Positing System (GPS) and ANAV that enables the system to accurately locate and report agent contamination. The mobility platform is a six-wheeled, all-wheel-drive armored vehicle capable of cross-country operation at speeds up to sixty-five mph.

The Fox System is fully amphibious with swimming speeds up to six mph. As a reconnaissance vehicle, it can locate, identify, and mark chemical/biological agents on the battlefield. The Fox usually accompanies the scouts or motorized reconnaissance forces when performing its NBC mission. It has an over-pressure filtration system that permits the crew to operate the system in a shirt-sleeve environment that is fully protected from the effects of NBC agents and contamination.

The M93A1 system is operated by a three-person crew (legacy systems require a four-person crew). The M93A1 will be one of the few systems fielded with a fully interactive class 4/5 electronic technical manual (IETM). The IETM is a single multimedia CD that contains the twelve-manual library and is structured to incorporate advanced diagnostics that support the system.

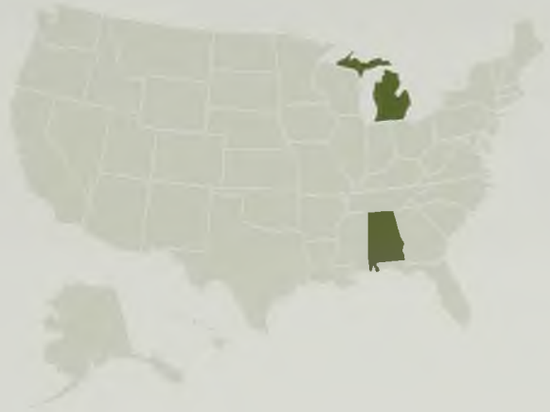
FOREIGN COUNTERPART
China: NBC reconnaissance vehicle; Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH; Germany: ABC Reconnaissance System.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY96 Awarded production contract for the Block I modification.
1QFY99 First unit equipped.
3QFY99 Fielded 34 systems.

PROJECTED ACTIVITIES
FY96–02 Continue production of the NBCRS Block 1 modification (M93A1). Approximately 88 of the legacy Fox systems are planned in this conversion.
3QFY03 Complete fielding of the last modification.

PRIME CONTRACTORS
General Dynamics (Detroit, MI and Anniston, AL); Henschel Wehrtechnik (Kassel, Germany)



* See appendix for list of subcontractors

UNITED STATES ARMY

MISSION
Provide a modernized, real-time meteorological capability over an extended battlespace. Provide vital target area meteorological information for the employment of "smart" weapons, ensuring proper munition selection and optimal aim point calculations.

DESCRIPTION AND SPECIFICATIONS
Profiler integrates profiles from ground-based meteorological sensors with meteorological satellite data to provide vertical profiles of the atmosphere. The system incorporates a suite of meteorological sensors and associated software/models which provide artillery forces with current or expected weather conditions, along the projectile trajectory and within the target area. The system's software is capable of providing artillery meteorological messages every 30 minutes based on an atmospheric model. The system will process the meteorological data as it is received and convert it into proper message formats. The system will interface with the Advanced Field Artillery Tactical Data Systems (AFATDS), Multiple Launch Rocket System (MLRS) Fire Direction System (FDS), Interim Fire Support Automation System (IFSAS), and the Integrated Meteorological System (IMETS). The Profiler will use Joint Technical Architecture–Army (JTAA) Defense Information Infrastructure Common Operating Environment (DII COE) hardware and software.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Concept exploration phase completed. Army Research Laboratory developed the proof of concept configuration (depicted).
1QFY00 Initiated engineering and manufacturing development (EMD) phase.
Complete milestone I/II decision.
Release request for proposal.

PROJECTED ACTIVITIES
3QFY00 Award EMD contract.
3QFY00 Preliminary design and review.
4QFY00 Critical design review.

PRIME CONTRACTORS
To be determined

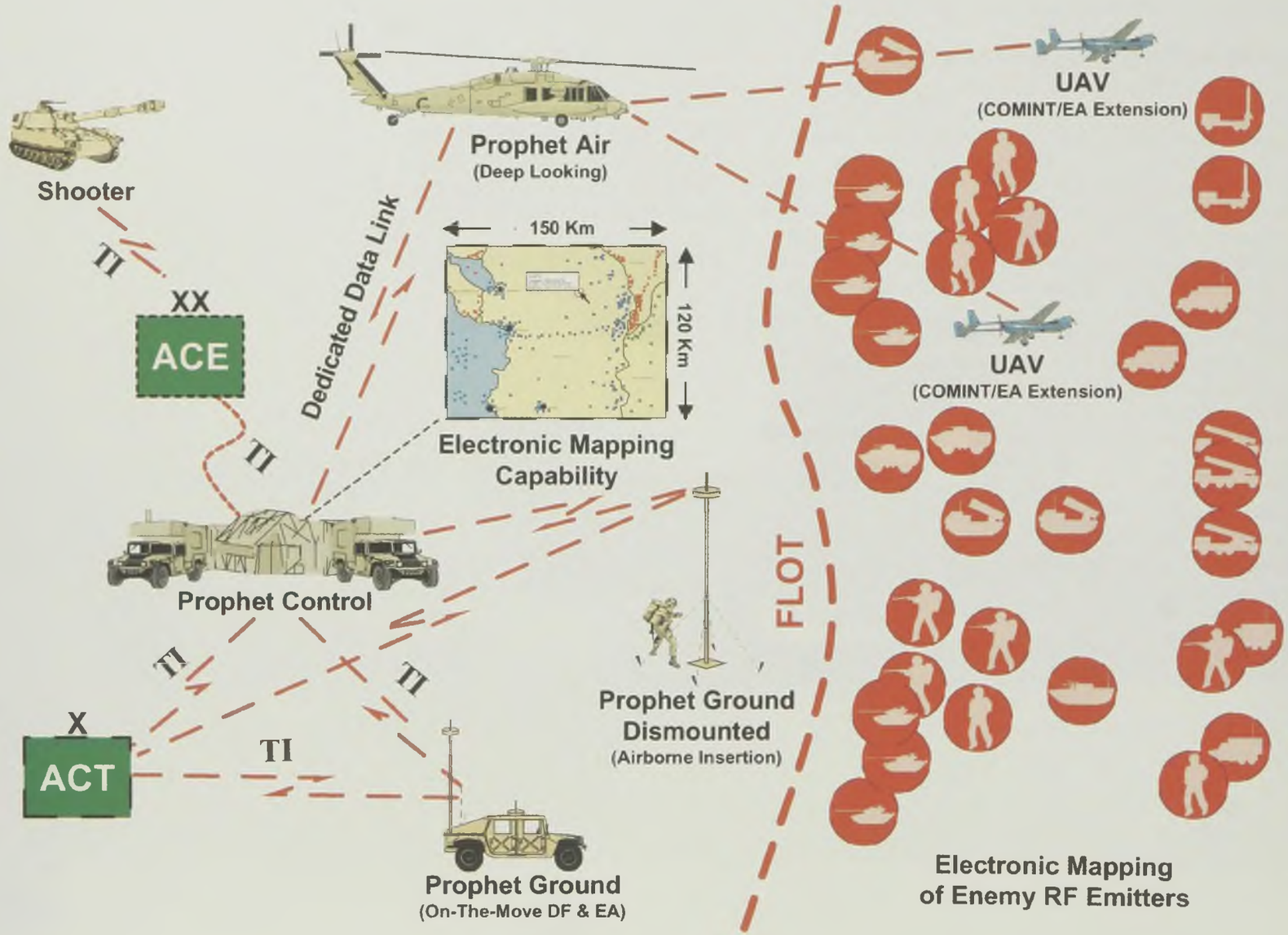

Project the Force


Gain Information Dominance


Conduct Decisive Operations


Sustain the Force

Prophet Operational Concept



MISSION

Serve as the Division's and Armored Cavalry Regiment's (ACR) principal Signals Intelligence (SIGINT) and Electronic Warfare (EW) system designed to support the Army Vision. Provide enhanced capability for situational awareness, electronic Intelligence Preparation of the Battlefield (IPB), battlespace visualization, target development, and force protection throughout the division and ACR areas of operations (AO).

DESCRIPTION AND SPECIFICATIONS

The Prophet system will consist of two major elements: Prophet Ground (PG) (PG includes a man-pack capability), and Prophet Unmanned Aerial Vehicle (Prophet UAV), which includes the Prophet Control (PC). The current structure of the program is due to termination of the Prophet Air program in support of the Army Vision. This decision was based on Army assessments of affordability, operational risk, and Army priorities. The Prophet system will have the capability to detect, identify, and precisely locate threat communications networks, and counter-mortar/battery and ground surveillance radars, and to conduct Electronic Attack (EA) against these threats.

PG collection sensors (Man-pack) will have the capability for early entry, airborne insertion. The base capability for PG is force protection in the man-pack system. When vehicular-mounted, the PG will also have on-the-move collection and reporting capabilities, and will also have an EA capability.

The **Prophet UAV** sensor collection subsystem will be remotely tasked and controlled by the PC. Prophet UAV will provide the division/ACR commanders with a deep looking EW platform capable of detecting, identifying, and locating Radio Frequency emitters throughout the AO. The Prophet UAV will also have an EA capability. The PC will be the SIGINT analysis element organic to divisions/ACRs. PC will be capable of tasking PG and Prophet UAV sensors, and of processing the detect/identification/location data. PC will also have an OTM capability to monitor the status of the electronic battlefield during displacement operations. The PC will interface with the division/ACR Analysis Control Element (ACE) All Source Analysis System (ASAS) and with the maneuver brigade Analysis Control Team's (ACT) Common Ground Station (CGS), and/or the ASAS-Remote Work Stations, to provide near-real-time inputs to the common operating picture.

FOREIGN COUNTERPART

The United Kingdom, Australia, and France either have or are actively pursuing a comparable vehicular system. Sweden recently procured an airborne SIGINT/EW capability.

FOREIGN MILITARY SALES

To be determined

PROGRAM STATUS

A recent Prophet program restructure deleted the helicopter platform in favor of the Prophet UAV approach. A prototype Prophet Ground (Block I) is in engineering and manufacturing development (EMD), which will be closely followed by a vehicle mounted EA EMD (Block II). The Prophet UAV is scheduled to enter a program definition risk reduction (PDRR) phase in FY01.

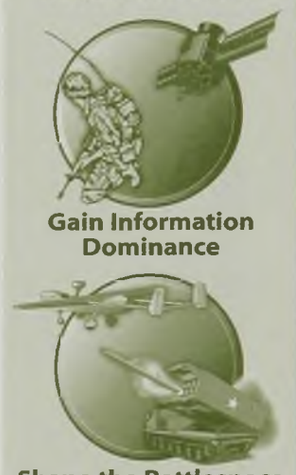
PROJECTED ACTIVITIES

CY00 Several Prophet candidate systems will be evaluated.
CY00–01 A PDRR contract for Prophet UAV will be awarded.

PRIME CONTRACTOR(S)

Delfin Systems (PG Block I Development) (Santa Clara, CA); Others: To be determined

* See appendix for list of subcontractors



Sentinel

UNITED STATES ARMY

MISSION
Provide critical air surveillance of the forward areas; automatically detect, track, classify, identify, and report targets (cruise missiles, unmanned aerial vehicles, rotary wing and fixed wing aircraft) to air defense weapons systems located in the forward area.

DESCRIPTION AND SPECIFICATIONS
The Sentinel is used with the Army's Forward Area Air Defense Command, Control, and Intelligence (FAADC2I) system. The Sentinel accomplishes its primary mission by providing key target data to Short Range Air Defense (SHORAD) weapons systems and battlefield commanders via the FAADC2 data link or directly from the Sentinel, using Enhanced Position Location Reporting System (EPLRS) or Single Channel Ground and Airborne Radio System (SINCGARS) data radios.

The Sentinel system consists of the High Mobility Multipurpose Wheeled Vehicle (HMMWV) group and the Antenna Transceiver Group (ATG) mounted on a one-ton, wide-track trailer, its identification friend or foe (IFF), and FAADC2 interfaces. The sensor is an advanced three-dimensional battlefield X-band air defense phased-array radar with an acquisition range of 40 km.

The Sentinel is capable of operating both day and night, in adverse weather conditions, and in battlefield environments of dust, smoke, aerosols, and enemy countermeasures. It provides 360-degree azimuth coverage for acquisition and tracking. The Sentinel automatically detects, tracks, classifies, identifies, and reports targets including cruise missiles, unmanned aerial vehicles, rotary-wing aircraft, and fixed-wing aircraft. The Sentinel can identify targets moving at speeds ranging from hovering to fast-moving and located at positions from nap of the earth to the maximum engagement altitude of SHORAD weapons. Accurate and fast-reacting, Sentinel acquires targets sufficiently forward of the forward line of troops to improve air defense weapon reaction time and allow engagement at optimum ranges. The Sentinel-integrated IFF reduces the potential for fratricide of friendly aircraft.The Sentinel is transported by an M1097A1 HMMWV using standard transportation methods.

FOREIGN COUNTERPART
Italy: Contraves LPD-20, Switzerland: Skyguard Improved, Russia: Hot Shot 2S6, France: El Dorado, Germany: Siemens DR-641, France: Rodeo and RA-20S.

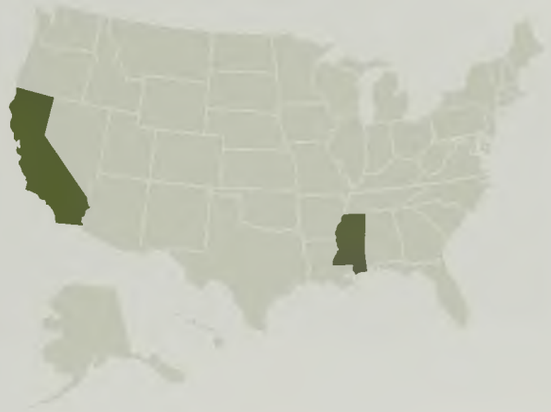
FOREIGN MILITARY SALES
Turkey

PROGRAM STATUS
- In production and deployment phase.
- Completed fielding to first digitized division and corps.

2QFY99 Fielded three armored cavalry regiment air defense artillery (ACR ADA).
3QFY99 Awarded full-rate production (FRP) contract 4.
Fielded 5-5 ADA.
4QFY99 Fielded 4-3 ADA.
October 1, 1999 Completed transition to SHORAD U.S. Army Armament, Munitions and Chemical Command Division Support Area.
Field 1-62 ADA in progress.
2QFY00 Awarded FRP contract 5.
Fielded 1-204th ADA National Guard.

PROJECTED ACTIVITIES
3QFY00 Begin FRP4 deliveries.
Field 1-4 ADA.
4QFY00 Field 3-62 ADA.

PRIME CONTRACTORS
Raytheon (El Segundo, CA; Forrest, MS)



* See appendix for list of subcontractors

Single Channel Ground and Airborne Radio System (SINCGARS)

UNITED STATES ARMY

Single Channel Ground and Airborne Radio System (SINCGARS)

Information Dominance

MISSION

Provide commanders with a highly reliable, secure, easily maintained combat net radio (CNR) with voice and data handling capability, in support of command and control operations.

DESCRIPTION AND SPECIFICATIONS

The Single Channel Ground and Airborne Radio System (SINCGARS), with its internet controller, provides the communications link for the digitized force. SINCGARS configurations include manpack, vehicular (both low and high power), and airborne models. Communications security is integrated into currently produced versions of the ground and airborne radios. System improvement program models provide upgrades to enhance operational capability in the tactical internet environment. The advanced system improvement program (ASIP) models (of a reduced size and weight) provide further enhancements to operational capability in the tactical internet environment.

ASIP dimensions:
Weight: 8.1 lb
Height: 3.4 in
Length: 10 in
Width: 5.4 in

FOREIGN COUNTERPART

United Kingdom: Racal; France: Thomson CSF; Belgium: Marconi; Sweden: Ericsson.

FOREIGN MILITARY SALES

Bahrain, Finland, Greece, Italy, Kuwait, Morocco, Saudi Arabia, SHAPE Tech Center North Atlantic Treaty Organization, Spain, Special Defense Acquisition Fund (for foreign military sites).

PROGRAM STATUS

2QFY99–1QFY00 Field the first digitized division.
3QFY99 Program Year 13 production option awarded.

The Army acquisition objective was revised to 230,748 ground and 9,248 airborne radios. A total of 225,089 radios have been procured to-date. Approximately 177,254 radios have been fielded.

The FY00–05 budget estimate submission contains funding to complete fielding of the ASIP model SINCGARS radios currently on contract.

The Product Manager, SINCGARS and the Signal Center at Fort Gordon are pursuing a Warfighter Rapid Acquisition Program (WRAP) initiative to integrate Global Positioning System (GPS) into the ASIP radio.

PROJECTED ACTIVITIES

3QFY00 Continue delivery of ASIP radios, facilitating retirement of the VRC-12 series radio.

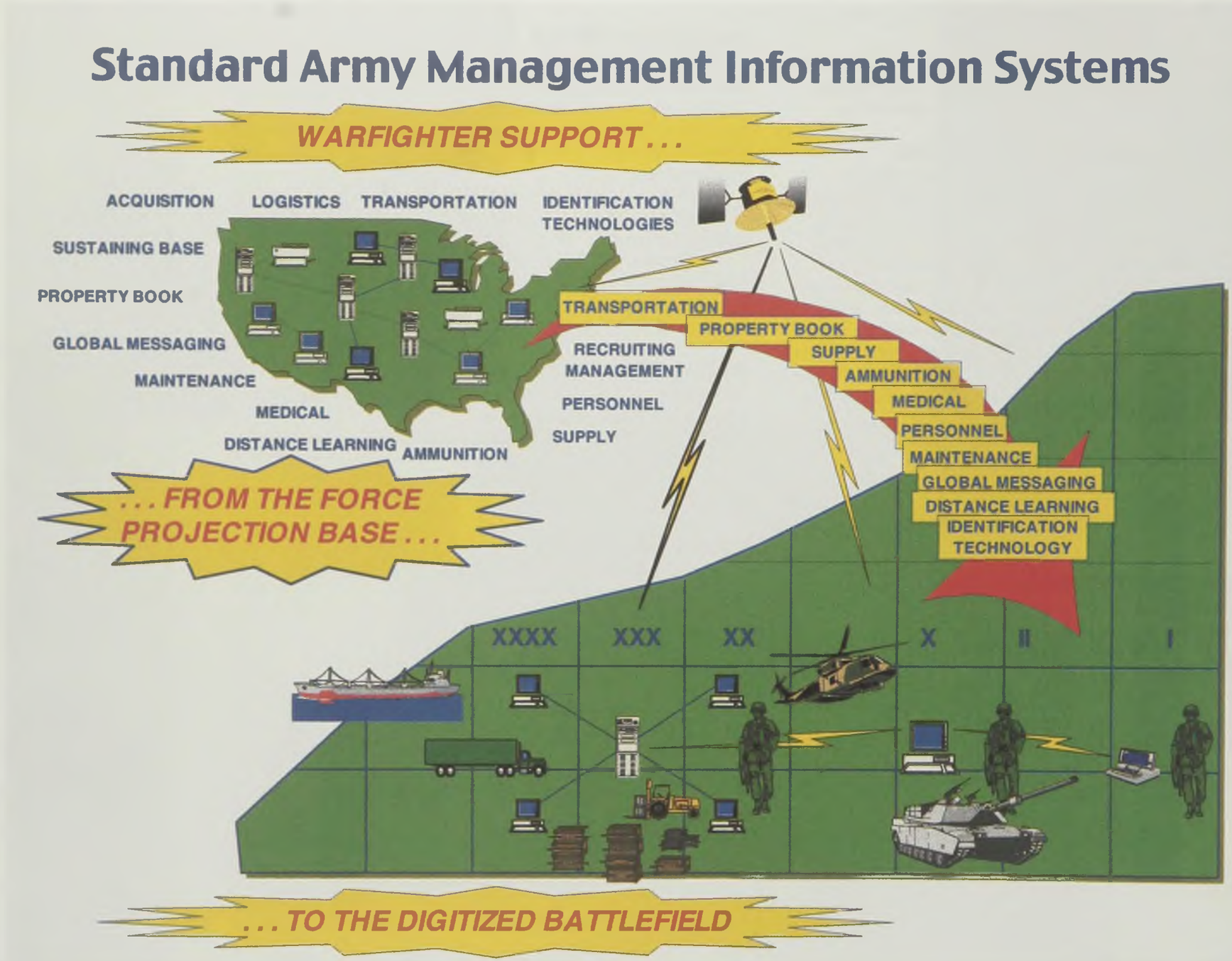
Procure GRM-122 radio test sets for Special Operations forces units.

Award of follow-on production contract scheduled.
FY01 Complete retirement of the VRC-12 series radio.

PRIME CONTRACTORS

International Telephone and Telegraph (Fort Wayne, IN)

* See appendix for list of subcontractors


Standard Army Management Information Systems
WARFIGHTER SUPPORT . . .
ACQUISITION
LOGISTICS
TRANSPORTATION
IDENTIFICATION TECHNOLOGIES
SUSTAINING BASE
PROPERTY BOOK
GLOBAL MESSAGING
MAINTENANCE
MEDICAL
DISTANCE LEARNING
AMMUNITION
RECRUITING MANAGEMENT
PERSONNEL
SUPPLY
TRANSPORTATION
PROPERTY BOOK
SUPPLY
AMMUNITION
MEDICAL
PERSONNEL
MAINTENANCE
GLOBAL MESSAGING
DISTANCE LEARNING
IDENTIFICATION TECHNOLOGY
. . . FROM THE FORCE PROJECTION BASE . . .
XXXX
XXX
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II
I
. . . TO THE DIGITIZED BATTLEFIELD

MISSION
To plan, develop, acquire, and field highly complex, modern management information systems to support the warfighter, from the force projection base to the battlefield.

DESCRIPTION AND SPECIFICATIONS
Standard Army Management Information Systems (STAMIS) provide diverse computer hardware and software systems based on validated customer requirements. Programs include: Joint Computer-aided Acquisition and Logistics Support (JCALS), Transportation Coordinators' Automated Information for Movement System II (TC-AIMS II), The Army Distance Learning Program (TADLP), Medical Communications for Combat Casualty Care (MC4), Defense Message System-Army (DMS-A), Army Recruiting Information Support System (ARISS), and the Standard Installation/Division Personnel System-3 (SIDPERS-3).

Legacy logistics automation systems which will migrate into the Global Combat Support System–Army (GCSS-Army) system includes: Standard Army Ammunition System (SAAS), Standard Army Maintenance System (SAMS), Standard Army Retail Supply System (SARSS), and the Unit Level Logistics Systems (ULLS). The GCSS-A is a key enabler for the Army Vision. The Tactical Management Information Systems Project Office acquires, integrates, and fields many of the PEO STAMIS and consists of: STAMIS Tactical Computer Project (STACOMP), Corps Theater ADP Service Center (CTASC-II), Combat Service Support Automated Information Systems Interface (CAISI), Civilian Personnel Regionalization Project, Installation Support Modules (ISM), and Hazardous Substance Management System (HSMS). PEO STAMIS are located worldwide and support the warfighter with automated information systems (AISs) during peacetime, mobilization, and redeployment operations.

STAMIS are in various stages of life-cycle management, utilizing commercial off-the-shelf (COTS) hardware/ software technology acquired from various contract identities. Contractor and government agencies provide system development support. STAMIS programs meet open-architecture requirements and provide integrated AIS solutions.

FOREIGN COUNTERPART
No known foreign counterpart

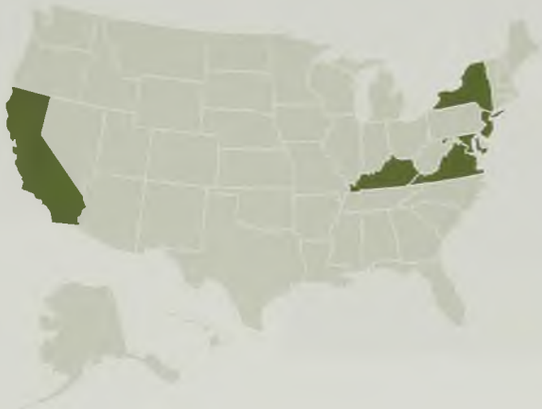
FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY99 Movement Tracking System (MTS) program contract awarded and implemented.
1QFY00 SIDPERS-3 completed fielding to active components, which will be followed by reserve component fielding.

JCALS system fielding continues toward an objective of 424 Department of Defense sites. ARISS fielding of laptop hardware/software is complete to all Army recruiters. Automated identification technology (AIT) integration in STAMIS and other programs is ongoing with a recent award of the AIT II contract.

PROJECTED ACTIVITIES
FY00–01 GCSS-Army continues development progress toward initial operational testing; ARISS will field software upgrades; and the MC4 program will provide upgrades to legacy systems and acquire high frequency radios for medical units.

PRIME CONTRACTORS
JCALS: Computer Sciences Corporation (Morristown, NJ)
DMS-A: Lockheed Martin (Bethesda, MD)
ARISS: Electronic Data Systems (EDS) (Fort Knox, KY)
GCSS-Army: GRCI (McLean, VA)
MTS: COMTECH Mobile Datacom (Germantown, MD)
SCC: GTSI (Chantilly, VA)
SIDPERS-3: EDS (Fort Knox, KY)
AITII /RFID: Symbol Technologies (Holtsville, NY); SAVI Technology (Mountain View, CA)



* See appendix for list of subcontractors

Standardized Integrated Command Post (SICPS)

5 ton Expansible Van CP

Rigid wall shelter CP

Soft Top HMMWV CP

Track Vehicle CP

Tent CP

MISSION
House the Army Battle Command System (ABCS) across all battlefield functional areas (BFAs).

DESCRIPTION AND SPECIFICATIONS
The Standardized Integrated Command Post (SICPS) is a family of standard command post (CP) facilities. The family includes a tent CP, a rigid wall shelter (RWS) CP, a track vehicle CP (M1068), a 5-ton expansible van CP, and a soft top High Mobility Multipurpose Wheeled Vehicle (HMMWV) CP.

Tent CP: The tent CP is 11 ft by 11 ft and is supported by a three-piece aluminum frame, with interchangeable fabric sidewalls. Any of these can be removed when attaching two or more tents. The tent CP is fielded with two tables, mapboards, and a fluorescent light set. It can be attached to any of the other SICPS variants, except the 5-ton expansible van CP, by replacing one sidewall with an interface boot wall.

Rigid Wall Shelter CP: This CP mounts on the HMMWV shelter carrier (M1097 or M1113) and is powered by an on-board 10 kW generator. Components include: equipment racks, internal lighting and blackout, power and signal import/export panels, internal wiring/cabling, vehicular intercom system, 18,000 BTU environmental control unit, chemical/biological protection, electromagnetic interference shielding, and quick erect antenna mast (QEAM). The CP provides workspace for two command, control, communications, computers and intelligence (C4I) workstations and two operators.

Track Vehicle CP: This is a modification of the existing M577 track vehicle to the M1068 CP vehicle. Added components include: an on-board five kW generator, equipment racks, internal lighting, power and signal import/export panels, internal wiring/cabling, vehicular intercom system, QEAM, and workspace for two C4I workstations and two operators.

5-Ton Expansible Van CP: An installation kit, M-2780/G, for the existing 5-ton expansible van (M934A2) provides equipment racks, internal lighting and blackout, power and signal import/export panels, internal wiring/cabling, QEAM, and workspace for four-each moveable C4I workstations and operators.

Soft Top HMMWV CP: An installation kit, M-2727/G, for the existing HMMW, provides equipment racks, internal lighting and blackout, power and signal import/export modules, internal wiring/cabling, a mount for QEAM, and workspace for two-each C4I workstations and operators.

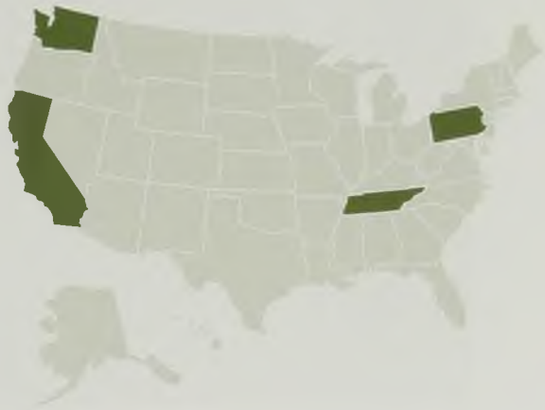
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Tent CP: In production. One tent delivered with each RWS and M1068.
RWS CP: Delivered 250 Version 1 shelters to BFAs and tactical operations centers (TOCs). A total of 275 Version 4s on contract. Commenced deliveries 2QFY98.
Track CP: Delivered 330 of 330 on contract to BFAs and TOCs. Awarded follow-on contract 2QFY99.
5-Ton Expansible Van CP: FY99 on contract with TYAD. Deliveries began 4QFY98.
Soft Top HMMWV CP: Delivered 160 of 200 on contract to BFAs and TOCs.

PROJECTED ACTIVITIES
Continue to deliver platforms to BFAs and TOCs to support ATTCS fieldings.

PRIME CONTRACTORS
Systems Support: RDA (Tacoma, WA);
M1068 Installation Kits: United Defense, L.P. (San Jose, CA)
RWS: Gichner Shelter System (Dallastown, PA)
SFTP and 5-Ton IKs: Tobyhanna Army Depot (Scranton, PA)
Tent CP: Camel Manufacturing (Caryville, TN)

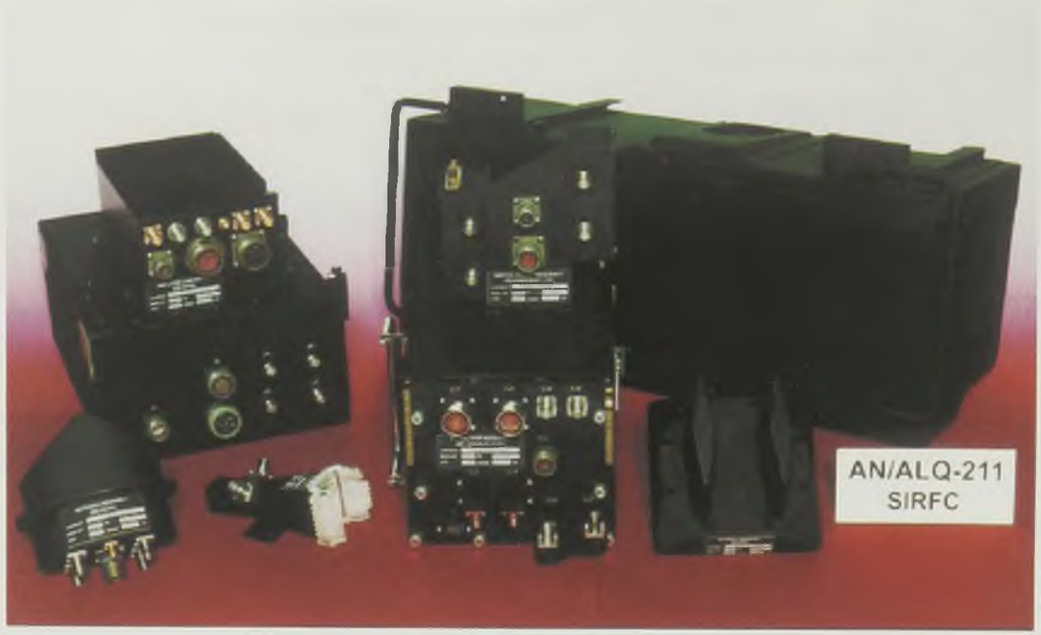


* See appendix for list of subcontractors

Gain Information Dominance

Conduct Decisive Operations

Suite of Integrated Radio Frequency Countermeasures (SIRFC)-AN/ALQ-2



MISSION
Provide radar warning and electronic countermeasures against air defense threats.

DESCRIPTION AND SPECIFICATIONS
The Suite of Integrated Radio Frequency Countermeasures (SIRFC)-AN/ALQ-211 detects, identifies, and counters multiple, simultaneous, modern surface and airborne threat radars. SIRFC combines both radar warning and electronic countermeasures (ECM), and also provides full-threat radar warning frequency coverage including millimeter wave, while countering pulse, pulse doppler, continuous wave, and pulse compression threats. Additionally, SIRFC provides active ECM including robust techniques against monopulse radars. The AN/ALQ-211 provides the aircrew with angle-of-arrival information and precision-direction finding of radio frequency threats. SIRFC is also capable of multi-sensor fusion and tactical situation assessment, enabling the aircrew to respond to the threat more quickly and appropriately. The AN/ALQ-211 is fully reprogrammable to meet specific mission requirements and can record threat data using Personal Computer Memory Card International Association (PCMCIA) cards. Finally, SIRFC will coordinate ECM responses with expendable countermeasures such as chaff or flares.

The AN/ALQ-211 SIRFC A kit weighs approximately 76 pounds and the SIRFC B kit weighs approximately 126 pounds in its current EMD configuration. The production model of the AN/ALQ-211 B Kit will weigh approximately 116 pounds.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
No new military sales

PROGRAM STATUS
4QFY98 Delivered first AN/ALQ-211 engineering and manufacturing development system.
1QFY99 Completed system integration/installation on AH-64D.
2QFY99 Accomplished first flight on AH-64D.
3QFY99 Began pole test at China Lake.

Completed initial tests at the Edwards Air Force Base Benefield Anechoic Chamber.

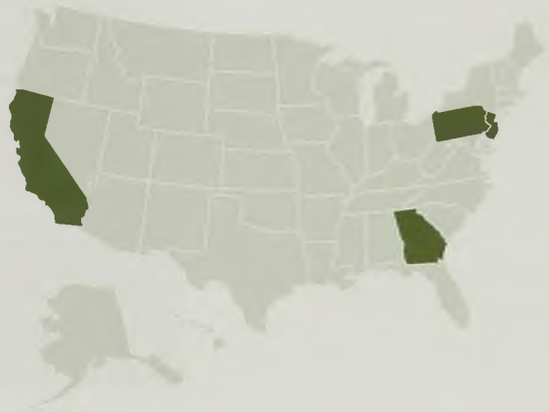
Completed integrated electronic technical manual validation/verification.
4QFY99 Completed initial key personnel training at Mesa, AZ.

Completed maintenance and logistics demonstration at Mesa, AZ.

Began contractor flight tests at China Lake Electronic Range.

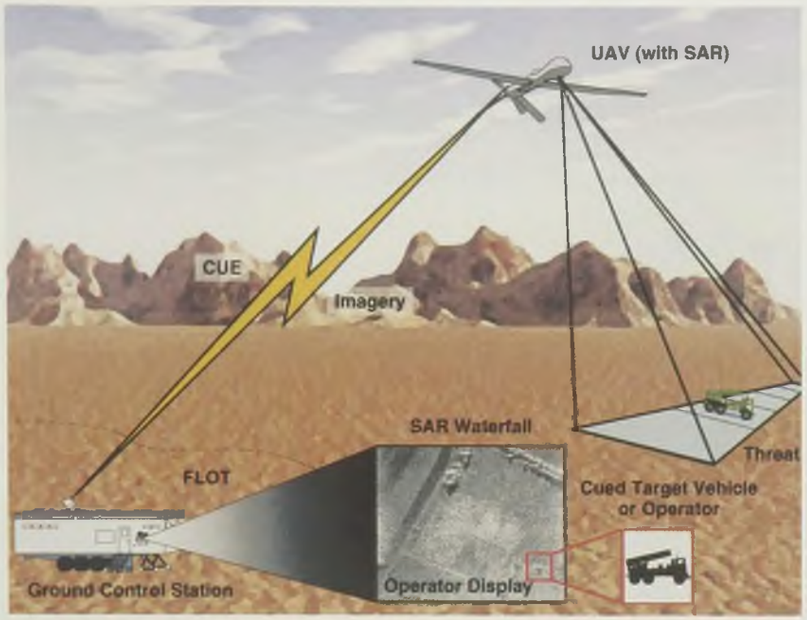
PROJECTED ACTIVITIES
3QFY00 Initiated SIRFC low-rate initial production.
4QFY01 Milestone III decision scheduled.
1QFY03 First unit equipped.

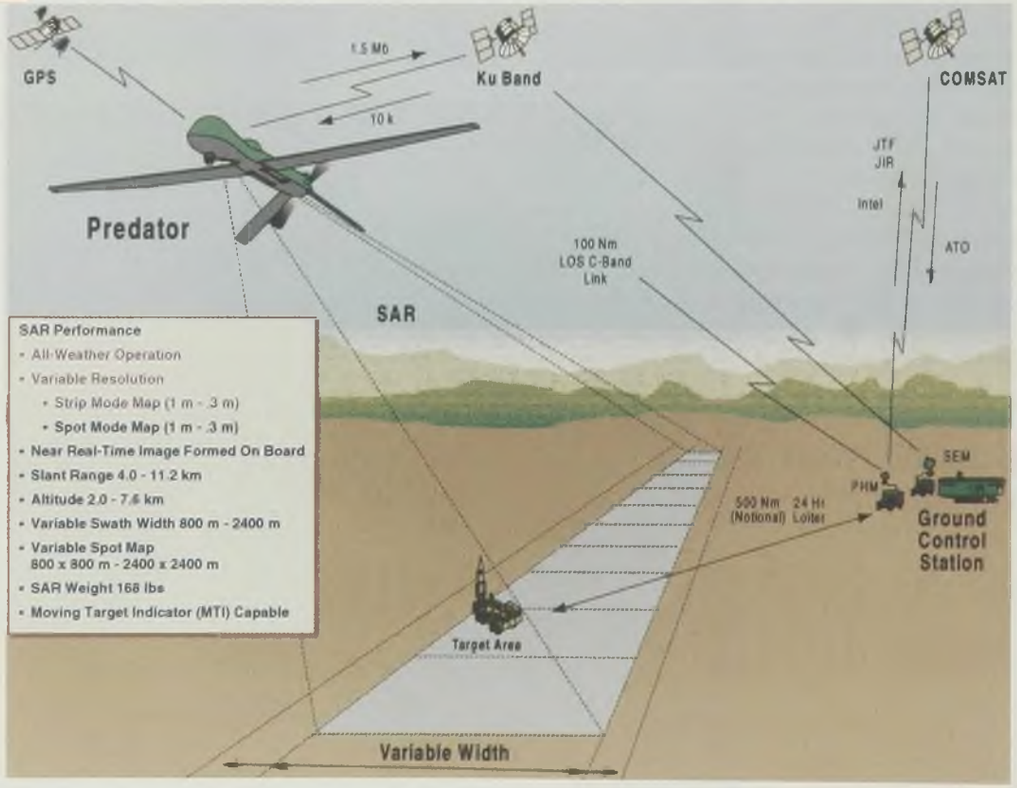
PRIME CONTRACTORS
International Telephone and Telegraph (ITT) (Clifton, NJ)



* See appendix for list of subcontractors

Tactical Endurance Synthetic Aperture Radar (TESAR)





MISSION

The Tactical Endurance Synthetic Aperture Radar (TESAR) provides the Medium Altitude Endurance Unmanned Aerial Vehicle (MAE UAV) with continuous all-weather coverage of worldwide targets. It supports long-endurance missions at significant operational ranges. High-quality 0.3-meter to 1-meter operator-selected variable resolution imagery is downlinked, analyzed, and distributed to the user. TESAR provides the commander with continuous reconnaissance, surveillance, and target acquisition.

DESCRIPTION AND SPECIFICATIONS

The Army's TESAR is key to the Office of the Secretary of Defense-sponsored MAE UAV Advanced Concept Technology Demonstration (ACTD) program. This ACTD quickly satisfied the need for long-dwell coverage and reconnaissance of small, mobile, or fixed targets. The program also developed concepts of operation for endurance UAVs. The TESAR sensor weighs 168 lbs and provides high resolution (0.3 m) imagery. This payload performs aerial image formation processing and downlinks continuous high-quality strip map imagery (800 m wide). Collected data is stored in the ground station, and selected images are disseminated via satellite link to various intelligence nodes.

TESAR consists of two subsystems: the SAR payload and the SAR ground control station (GCS) elements. The SAR payload consists of three line-replaceable units: the antenna, the receiver/transmitter, and the processor. The SAR system has three modes of operation. Mode 1 provides mapping parallel to the flight path, even during turns or along curved paths, minimizing gaps in the center of the image. Mode 2 is the classic strip map mode: Mapping occurs over a predetermined scene center irrespective of the aircraft's movement. Mode 3 is the variable resolution pseudo-spot mode: A selected area is continuously mapped as the aircraft moves through the area. High reliability, modular design, and comprehensive built-in diagnostic capability enable simplified maintenance and support. The TESAR GCS elements provide the primary image display and diagnostics for the SAR payload. TESAR's GCS consists of a single interface/archive rack assembly, featuring a graphics server, a high-resolution color monitor, a power control panel, and other peripherals. This assembly also interfaces from the wide-band satellite to the datalink.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

Delivered 19 production SAR systems, 4 sets of SAR spares, 6 SAR ground control workstations, and 4 sets of SAR workstation spares. Delivery pending on 47 SAR systems on contract.

PROJECTED ACTIVITIES

- Continue deliveries of production SAR systems.
- Undertake future enhancements including: Power PC upgrade, enhanced built-in test, and ruggedized PC ground support equipment.

PRIME CONTRACTORS

Northrop Grumman (Baltimore, MD)

* See appendix for list of subcontractors

Tactical Exploitation System (TES)

UNITED STATES ARMY

MISSION
Serve as an interface between national systems and in-theater tactical forces, as well as receive data from selected theater sensor systems.

DESCRIPTION AND SPECIFICATIONS
The Tactical Exploitation System (TES) is the Army's system for the 21st century. It will replace the Advanced Electronic Processing and Dissemination System (AEPDS), Enhanced Tactical Radar Correlator (ETRAC) and the Modernized Imagery Exploitation System (MIES). The system combines Tactical Exploitation of National Capabilities (TENCAP) functionality in a single integrated, scaleable system designed for split-based operations. TES is designed for split-based deployment and will consist of forward and main elements. TES Forward is a highly mobile, High Mobility Multipurpose Wheeled Vehicle (HMMWV)-based element configuration; TES Main is housed in vans. Each element has similar operational, communications, and support capabilities.

TES is designed to provide the commander maximum flexibility to satisfy intelligence needs in a wide range of operational scenarios. TES provides multiple configurations, ranging from one C-130 deployable HMMWV early-entry capability to collocated main and forward elements with up to 40 operator workstations. TES operators can perform any imagery intelligence (IMINT), signal intelligence (SIGINT), cross-intelligence, or dissemination function from any system workstation. TES provides quick setup/tear-down and C-130 drive-on/drive-off capability to support rapid deployment.

FOREIGN COUNTERPART
No known foreign counterpart

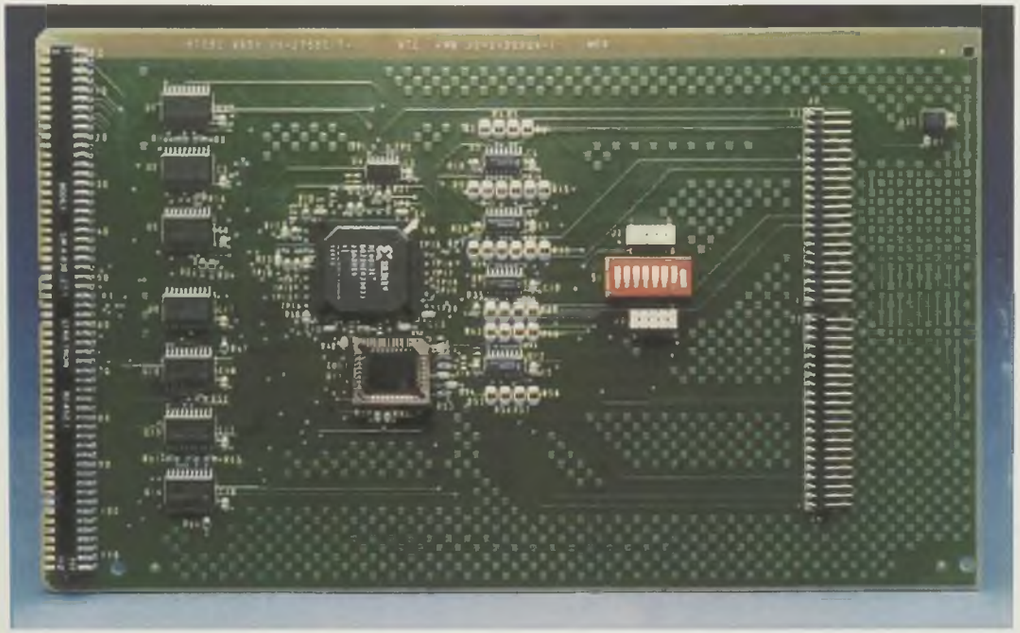
FOREIGN MILITARY SALES
None

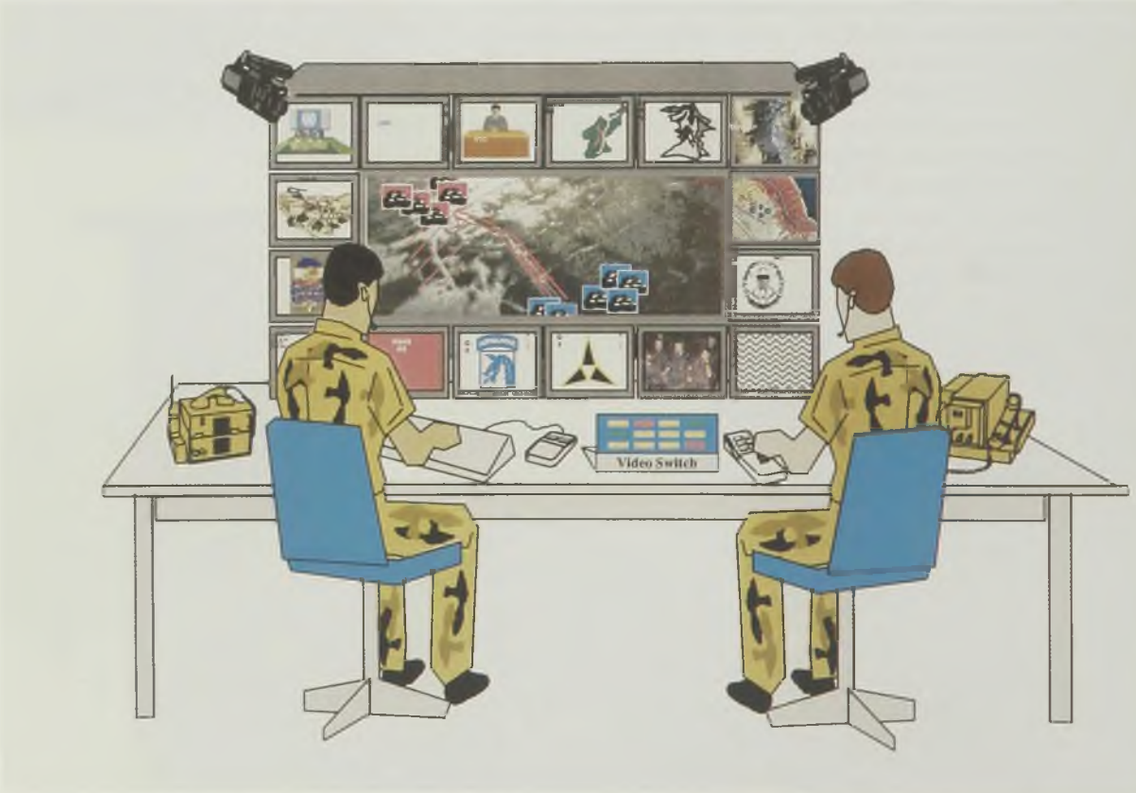
PROGRAM STATUS
3QFY99 The forward component of the TES system participated in the Navy's Fleet Battle Experiment-Echo (FBE-E) at Camp Pendleton, CA. Army, Navy, and Marine SIGINT and IMINT analysts operated the system, providing valuable user feedback on system configuration and operations.
4QFY99 The forward component of the TES system participated in the Air Force's Joint Expeditionary Force Experiment 99 (JEFX-99) at Nellis Air Force Base, NV. User training was provided, along with demonstrating the initial operational capability of the system to the XVII Airborne Corps, 525 Military Intelligence Brigade, C Company, 319th Military Intelligence Battalion, the first unit to receive the TES system.
1QFY00 Fielding of TES #1 Forward to XVIII Airborne Corps completed.
2QFY00 Contract awarded for TES follow-ons (4 TES, 1 TES Forward, and 1 TES[-] are currently funded within the POM).
Current Five full TES systems plus various divisional and lower echelon assets are funded in the POM. The Navy Reserves currently have one TES Forward under contract with plans to procure up to a total of five systems.

PROJECTED ACTIVITIES
3QFY00 Commence fielding of TES #1 Main to XVIII Airborne Corps.

PRIME CONTRACTORS
Classified

Tactical High Speed Data Network (THSDN)





Tactical High Speed Data Network (THSDN)

Information Dominance

MISSION

Provide video and high-speed data access through the Mobile Subscriber Equipment (MSE) and Army echelon above corps Tri-Service Tactical Communications System (Tri-Tac) switches by supporting data rates of 64, 128, 256, and 512kb/s (256 max for video teleconferencing [VTC]); enhance data throughput on the MSE/Tri-Tac backbone communications system; enable users to conduct videoconferences and send data through internet protocol routers.

DESCRIPTION AND SPECIFICATIONS

The Tactical High-Speed Data Network (THSDN) consists of a modification work order for modifying MSE and Tri-Tac switches with the following: high speed tactical circuit cards, forward error correction cards, routers and workstation enhancements. There will also be a network management capability and a software upgrade to improve VTC calls. THSDN is an interim solution to handle the field's increased data demands until the objective Warfighter Information Network-Terrestrial (WIN-T) solution is available.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

4QFY98 HSMUX circuit card assembly (CCA) approved as a Warfighter Rapid Acquisition Program candidate.
1QFY99 Created a formal high speed data program, due to the increasing field needs for data and logistics concerns associated with direct unit purchases of HSMUX equipment.
3QFY99 Awarded research, development, test, and effort for the associated circuit cards.
4QFY99 Awarded contract for the NRE system integration and two initial fieldings.
1QFY00 Contractor completed a CCA test and began a system test.

Installed THSDN capability in the 82nd Signal Battalion equipment. Conducted field testing at Ft. Bragg.

PROJECTED ACTIVITIES

2QFY00 Continue field testing at Ft. Bragg; certification testing at JTIC; release modification work order; award production and fielding effort; initial fielding to 82nd Signal Battalion.

PRIME CONTRACTORS

General Dynamics (Taunton, MA)

* See appendix for list of subcontractors

Tactical Operations Centers (TOCs)

Tactical Operations Centers (TOCs)

Information Dominance

MISSION

To develop and field operationally effective, affordable, and supportable integrated, digitized Tactical Operations Centers (TOCs) which meet the functional information requirements of commanders and staffs at all echelons of command.

DESCRIPTION AND SPECIFICATIONS

TOCs incorporate Army Battle Command Systems (ABCSs), standard vehicles, shelters and tentage, and are transportable in military aircraft. TOCs are digitized, tactically mobile, and fully integrated. Military off-the-shelf (MOTS), non-developmental items (NDI), commercial off-the-shelf (COTS), and emerging technologies are incorporated, and the TOCs are Defense Information Infrastructure/Common Operating Environment (DII/COE) and Joint Technical Architecture (JTA) compliant. TOCs are interoperable across all Army mission areas and joint/allied command and control nodes, and provide a common operational picture to the warfighter. TOCs are also modular and provide a "jump" or split-based capability. Operations are revolutionized through a combination of state-of-the-art data processing, communications, and information transport methods, using the tactical internet and the latest networking capabilities. Information dominance is achieved through the orderly evolution of capabilities that were demonstrated during Advanced Warfighting Experiments. These include collaborative planning, improved large screen displays, new data radios and the tactical internet.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

2QFY97 Established TOC program.
2QFY99 Awarded integration contract.
1QFY00 First TOC Standard Integrated Command Post System (SICPS) delivered.

PROJECTED ACTIVITIES

1QFY01 Field to first digitized division.
FY03 Complete fielding to second digitized division.
FY04 Field III Corps.

PRIME CONTRACTORS

Motorola (Huntsville, AL)

* See appendix for list of subcontractors

Tactical Quiet Generators (TQG)

MISSION

Provide a modernized standard family of mobile electric power generators for all services throughout the Department of Defense (DoD). Accomplish this mission through a coordinated inter-service effort to develop, acquire, and support mobile electric power generators from small, 0.5 kW manportable generators to large, 920 kW and greater prime power generating systems.

DESCRIPTION AND SPECIFICATIONS

Tactical Quiet Generators (TQGs) are the new DoD standard family of tactical electric power sources. TQGs are state-of-the-art generator sets that fully meet the following requirements:

- Increased mobility (less wgt/cube) and reliability (500–600 hrs MTBF)
- Reduce noise (to 70dBA at 7m) and infrared (IR) signature
- Increased survivability in a nuclear environment
- Provide quality electric power for command posts, command, control, communications, computers, and intelligence (C4I) systems, weapon systems, logistics and maintenance functions, medical facilities, and other battlefield support equipment

The military standard generator fleet is overaged and requires ever-increasing maintenance and logistics support which adds to total ownership costs. The new TQGs are modernized with the latest proven commercial technologies, and more efficient than previous models, contributing to reduced total ownership costs and increased battlefield mobility and survivability.

FOREIGN COUNTERPART

No known foreign counterpart; however, the 2 kW Military Tactical Generator (MTG) was originally manufactured in Canada and bought by the Canadian Ministry of Defense. It has been adapted by the U.S. DoD.

FOREIGN MILITARY SALES

TQGs have been obtained by Bahrain, Brunei, Canada, Columbia, Egypt, Ethiopia, Greece, Honduras, Israel, Korea, Kuwait, Macedonia, New Zealand, Philippines, Portugal, Saudi Arabia, Spain, Taiwan, Thailand, Tunisia, Turkey, and United Arab Emirates.

PROGRAM STATUS

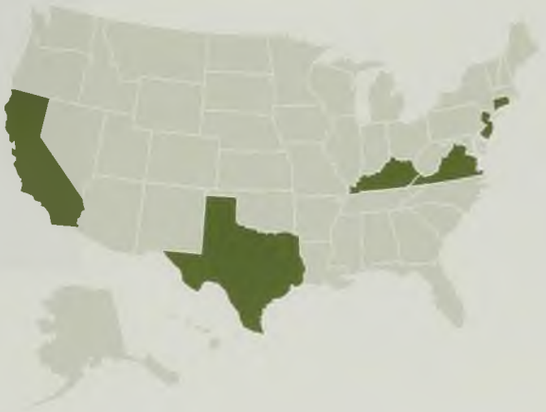
2kW MTG: Production deliveries, Force Package (FP) 1 fielding, started FP2 fielding.
3kW TQG: Completed testing; started production deliveries.
5-60kW TQGs: FP1 fielding nearing completion (over 10,000 sets); continue FP2 and Data Interchange (DI) fielding.
30/60kW TQG Re-Engine: Completed first article test; started production.
DPGDS: Operational test and evaluation (OT&E).
AMMPS (Advanced Medium-sized Mobile Power Sources): (TQG follow-on program) Commenced initial research and development (R&D) efforts.

PROJECTED ACTIVITIES

2kW MTG: Continue FP1, FP2, and DI fielding.
3kW TQG: Production deliveries; begin FP1 fielding.
5-60kW TQGs: Continue FP2 and data interchange fielding.
30/60kW TQG Re-Engine: Continue FP2 fielding.
100kW and 200kW TQGs: Make phase I engineering and manufacturing development multiple contractor prototypes award.
DPGDS: Continue OT&E.
AMMPS: Continue R&D efforts.

PRIME CONTRACTORS

5-60kW TQGs and 3kW TQG: Fermont (Bridgeport, CT)
2kW MTG: Dewey Electronics (Oakton, NJ)
30/60kW TQG Re-Engine: MCII (Dallas, TX)
5kW 28VDC APU: Goodman Ball (Menlo Park, CA)
10kW APU: Keco Industries (Florence, KY)
100kW and 200kW TQG: To be determined
DPGDS: Radian (Alexandria, VA)
AMMPS: To be determined



* See appendix for list of subcontractors

Tactical Simulation Interface Unit (TSIU) (WRAP Candidate)

Tactical Simulation Interface Unit (TSIU) (WRAP Candidate)

Information Dominance

MISSION

Provide an interface between simulation/simulators and elements of the Army Battle Command System (ABCS) and other automated command and control systems; provide staff and commanders the opportunity to train, rehearse missions, or refine tactics, techniques, and procedures, at command, control, communications, computers, and intelligence (C4I) workstations, and as a collective battle staff.

DESCRIPTION AND SPECIFICATIONS

The Tactical Simulation Interface Unit (TSIU) generates tactical messages compatible with elements of the Army Tactical Command and Control System (ATCCS), Force XXI Battle Command Brigade and Below (FBCB2), and the Global Command and Control System (GCCS). These messages originate in simulation or simulators supported by the Distributed Interactive Simulation (DIS) standard. Signal Protocol Data Units (PDUs), or Command and Control Simulation Interface Language (CCSIL) messages transport data from simulation/simulators to the TSIU. The TSIU provides two-way message traffic between the tactical system and the simulation environment. The system runs on a SUN platform and can provide messages via local area networks (LANs) or serial links. The TSIU supports the following protocols: Variable Message Format (VMF); Joint Variable Message Format (JVMF); United States Messages Text Formats (USMTF); Moving Target Indicator and Position (MTI); Tactical Data Link-B (TADIL-B); Tactical Data Link-A (TADIL-A); Tactical Data Link-J (TADIL-J); Tactical Information Broadcast Service (TIBS); TRAP Data Dissemination System (TDDS); and FAAD Data Link (FDL). The TSIU is deployable for training purposes worldwide.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

Transition of the TSIU to the high-level architecture (HLA) protocol has begun and will be completed in FY01. The TSIU currently is used in Atlantic Command, Central Command, European Command, U.S. Forces Korea, Forces Command, Army Space Command, and U.S. Army Training and Doctrine Command. Improvements that are planned in the upcoming fiscal year include adding a robust graphical user interface (GUI), porting the HLA version to an NT, adding additional message capability, and building on a training class.

PROJECTED ACTIVITIES

- Roving Sands
- III Corp Warfighter
- Lucky Sentinel
- Digital Battle Staff Trainer
- JCF Advanced Warfighting Experiment
- DCX

PRIME CONTRACTORS

The TSIU is government-owned software and is maintained by the Space and Missile Defense Battle Lab (SMDBL) (Huntsville, AL). SMDBL's prime contractor for this project is Coleman Research Corporation (Huntsville, AL).

* See appendix for list of subcontractors

Tactical Unmanned Aerial Vehicle (TUAV)

UNITED STATES ARMY

MISSION

Provide reconnaissance, surveillance, and target acquisition (RSTA) to U.S. Army brigades and regiments at an initial range of 50 km, day or night, in limited adverse weather conditions with a future, objective range extending to 200 km.

DESCRIPTION AND SPECIFICATIONS

The Tactical Unmanned Aerial Vehicle (TUAV) is intended for use in environments where real-time information feedback is needed, but manned aircraft are unavailable, or excessive risk or other conditions render use of manned aircraft imprudent. A TUAV system consists of two ground control stations (GCSs), one portable ground control station, one portable ground data terminal, four remote video terminals (RVTs), a minimum of three air vehicles (AVs), modular mission payloads (MMPs), and launch and recovery equipment.

The GCS collects, processes, analyzes, and distributes digitized battlefield information by interfacing with present and planned service command, control, communications, computers and intelligence (C4I) systems. Flight and mission commands are sent to the AVs from the GCS. RSTA imagery and AV position data are downlinked directly to the GCS or RVTs located in tactical operations centers of the brigade, its subordinate battalions, and/or the direct support artillery or supporting aviation units. The complete TUAV system is transportable by two C-130 aircraft. Mission capability will be enhanced as advanced mission payloads become available, maximizing battlefield digitization to increase the effectiveness of other weapon systems.

FOREIGN COUNTERPART

Several of our allies are operating systems of a similar class, namely the U.K. (Phoenix), Israel (Searcher and Searcher II), France (Fox AT) and Sweden (Ugglan). Denmark, Belgium, and the U.K. are developing requirements or acquiring systems in the TUAV class. Open literature suggests that many countries have some type of system, but most are experimental.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

- A reduced-footprint Hunter UAV system is currently being considered as a near-term surrogate for a TUAV in the Brigade Combat Team until the TUAV can be fielded. Also, the PM is exploring ways to accelerate the production of TUAV systems by as much as one year in support of the Army Vision.
- After conducting a full and open competition to select the best value, commercial off-the-shelf TUAV system, the Army selected AAI Corporation's Shadow 200.
- December 21, 1999: TUAV approved to enter into the engineering, manufacturing, and development phase and authorized the production of four low-rate initial production (LRIP) TUAV systems.
- December 27, 1999: The Army contracted with AAI Corporation for four LRIP TUAV systems.
- The Hunter UAV has been placed at the Joint Readiness Training Center, the U.S. Army Training and Doctrine Command schoolhouse, and in the 504th Military Intelligence Brigade/III Corps, until the TUAV is fielded. The Hunter is being used to support the continued development of UAV tactics, techniques, and procedures; concept of operations; and light force UAV spiral development and experimentation.

PROJECTED ACTIVITIES

FY00 Development of four TUAV LRIP systems, C4I testing and integration of the GCS, identification of the initial operational test and evaluation (IOT&E) test unit and IOT&E test location.

FY01 Developmental testing, delivery of four LRIP systems, operational testing, and Milestone II review.

PRIME CONTRACTOR(S)

AAI Corporation (Hunt Valley, MD)

* See appendix for list of subcontractors

Thermal Weapon Sight (TWS)

Medium Weapons TWS

Light Weapons TWS

Heavy Weapons TWS

TWS P3I

MISSION
Provide the U.S. Army infantry with the ability to detect and engage targets day or night during clear or degraded visual conditions caused by smoke, fog, or dust.

DESCRIPTION AND SPECIFICATIONS
The AN/PAS-13 Thermal Weapon Sight (TWS) enables the soldier to see deep into the battlefield; increases surveillance and target acquisition range; and penetrates obscurants, day or night. With this capability, individual and crew-served weapon gunners will truly "own the night."

The TWS family represents a substantial improvement over the image-intensifier night sights currently in use for small arms. TWS is a Second-Generation Forward Looking Infrared (FLIR), is digital-battlefield compatible, and provides a standard video output for training, image transfer, or remote viewing. The TWS Modular Ballistic Solution (TWS-MBS) will incorporate a laser rangefinder, digital compass, and automatic aimpoint adjustment for improved performance of the M2 heavy machine gun and MK19 grenade machine gun. TWS is concluding limited production and is ready for full-rate production.

TWS Family	Range	Weight	Field of View	Weapons Supported
LTWS**	550m	3.0 lb	15°	M16, M4, M203, M136
MTWS	1100m	4.5 lb	9° and 15°	M249, M60, M240B
HTWS	2200m	5.0 lb	3° and 9°	M2, MK19, M24,M16 Squad Ldr

** *These weapons are currently supported by the MTWS. LTWS to be qualified in 4QFY00 and part of program year 3 Thermal Omnibus purchase.*

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
- Completed TWS limited production.
- Commence TWS "bridge" production.
- Awarded Thermal Omnibus full-rate production contract.
- Pursuing TWS MBS effort for laser rangefinder/digital compass assembly.

PROJECTED ACTIVITIES
4QFY00 Award program year 3 Thermal Omnibus contract. (Options may include LTWS.)

PRIME CONTRACTORS
Raytheon (Dallas, TX)

* See appendix for list of subcontractors

Gain Information Dominance

Conduct Decisive Operations

Warfighter Information Network–Terrestrial (WIN-T) Switches

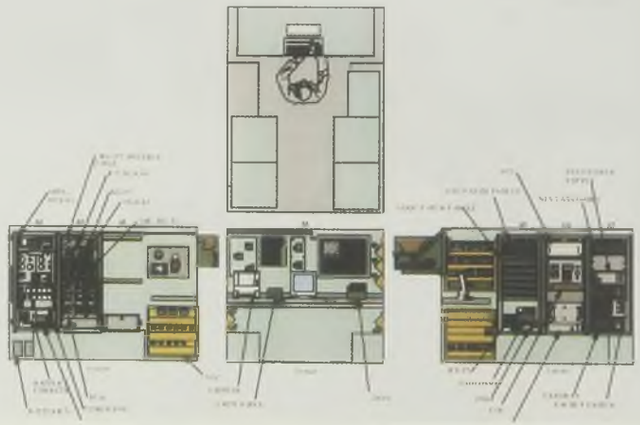
Compact Digital Switch (CDS)

AN/TTC-39D W/PS

LAST CHANGE - OCT 98

Switch Multiplexer Unit (SMU)

AN/TTC-56(V)1 SSS Shelter Layout



MISSION
Improve the tactical communications infrastructure; significantly reduce the amount of lift assets required to deploy signal forces into the area of operation.

DESCRIPTION AND SPECIFICATIONS
Project Manager, Warfighter Information Network-Terrestrial (PM WIN-T) is fielding three new switches; the Compact Digital Switch (CDS), the Switch Multiplexer Unit (SMU), and the AN/TTC-56 Single Shelter Switch (SSS). These switches provide easier transportability for rapid mobilization and increased mobility of a network that supports command and control on-the-move (C2OTM). The SSS integrates the CDS and SMU in a single CMS shelter.

AN/TTC-39D. The mission of the AN/TTC-39D is to serve as a gateway switch (interface) between Mobile Subscriber Equipment (MSE) systems deployed at echelons at corps and below (ECB) and other joint service switches deployed at echelons above corps (EAC). It is a transportable automatic switching system. The circuit switch also has a routing function that provides a means for locating subscribers in a network.

CDS. The CDS is a small lightweight stand-alone circuit switch designed for rapid deployment. It is used by Army and Air Force contingency forces in support of Special Operations forces.

SMU. The SMU can be assembled in a transit case configuration, is capable of being carried by four personnel, or can be easily mounted into rack configurations. It can interface with and accommodate a wide range of communication systems and equipment, both tactical and strategic via a T1/CEPT2 circuit card.

SSS. The mission of the Single Shelter Switch (SSS) is to serve as a gateway switch (interface) between MSE systems deployed at ECB and other joint service switches deployed at EAC. It is a downsized High Mobility Multipurpose Wheeled Vehicle (HMMWV) mounted version of the AN/TTC-39D.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
The CDS and SMU programs are presently in production. They can be acquired from the Tactical Switch Requirements Contract, DAAB07-97-D-F758. The Single Shelter Switch program is in production; 27 units are currently being built by GTE. The SSS initial operational test and evaluation was completed 1QFY00. The AN/TTC-39D fieldings are complete.

PROJECTED ACTIVITIES
The AN/TTC-39D will be re-distributed to Guard and Reserve units after they are displaced by fielding of Single Shelter Switch.

PRIME CONTRACTORS
CDS, SMU, SSS, and AN/TTC-39D: General Dynamics (Taunton, MA)

* See appendix for list of subcontractors

ACUS Radio Modernization Program

Army Common User System (ACUS)

High Capacity Line of Sight (HCLOS) Radio

MISSION
Provide switching and data transmission capability for the U.S. Army's Area Common User System (ACUS).

DESCRIPTION AND SPECIFICATIONS
The High Capacity Line of Sight (HCLOS) Radio, which replaces the existing AN/GRC-226 radios in the AN/TRC-190 line-of-sight (LOS) shelter family, will serve as the baseline for the Warfighter Information Network (WIN) objective system. The HCLOS radio will provide the larger transmission "pipes" required to transport the increased volume of data on the digital battlefield. It will support full duplex digital traffic at rates of up to 8192 kbps per second and distances up to 40 km. Provides high bandwidth efficiency and low bit error rate. The radio will operate in both Band I (225–400MHz) and Band III+ (1350–2690 MHz). Control of the radio is via a menu-driven keypad. Modified radio software can be downloaded from a personal computer for field upgrades. The multiplexer will be enhanced and a fiber optic capability added. A new Band III+ antenna will be provided.

The Army Common User System (ACUS) Asynchronous Transfer Mode (ATM) upgrade provides the first step in increasing data and video capacity on the digitized battlefield. The ACUS ATM upgrade is a two-phase program that fills the gap while tactical communications is transitioned from current legacy capabilities to the objective Warfighter Information Network–Terrestrial (WIN-T) capabilities. Phase I of this upgrade provides a division slice upgrade to the 4th Infantry Division's 124th Signal Battalion MSE. This upgrade utilizes commercial off-the-shelf (COTS) ATM switches and COTS routers. Forward error correction is provided to adapt ATM to the inherently "dirty" tactical line-of-sight radio systems. Interface to legacy systems is retained for both voice and data. Phase 2 of the program will provide increased data communications bandwidth to the 124th Signal Battalion and 3rd Corp at Ft. Hood, TX. For the 124th Signal Battalion/3rd Corp the upgrades will provide larger "pipes," simplify the soldier machine interface, provide a scalable data network, automate addressing schemes for data subscribers, provide standardized battlefield video teleconference transport, increased network security, and improved network management.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
Similar ATM upgrades are planned for the Improved Mobile Subscriber Equipment (IMSE) being sold to Taiwan. An HCLOS upgrade is also planned; however, it will likely utilize a Tadiran radio in lieu of the AN/GRC-245.

PROGRAM STATUS
1QFY97 Awarded ACUS ATM upgrade phase 1 contract.
3QFY98 Awarded HCLOS contract to Canadian Marconi Company.
2QFY00 Commence ATM/HCLOS fielding to the 4th Infantry Division.

PROJECTED ACTIVITIES
3QFY00 Equip the 124th Signal Battalion with the HCLOS radio; as funding becomes available, install HCLOS in remaining echelons at corps and below units.
4QFY00 Complete HCLOS/Phase 2 ATM operational testing and fielding to the unit.

PRIME CONTRACTORS
HCLOS: Canadian Marconi Company (Ville Saint-Laurent, Quebec, Canada)
ATM: General Dynamics (Taunton, MA)

* See appendix for list of subcontractors

Military Operations in Urban Terrain (MOUT) Advanced Concept Technology Demonstration (ACTD) (1998–2002)

The joint Army/Marine Corps Military Operations in Urban Terrain (MOUT) ACTD has experimented with a breadth of technologies that address 32 user requirements in the functional areas of:

- Command, control, communications, computers, and intelligence (C4I);
- Engagement (lethal and non-lethal);
- Force protection; and
- Mobility.

Technologies that were considered include intelligence collection; map production; mission-planning tools; hands-free, non-line-of-sight communications; sniper detection; explosive and non-explosive breaching; non-lethal weapons; advanced sensors; situational awareness; and personal protection.

MOUT System of Systems

The core capability generated by the ACTD is the integration of advanced systems/components into a MOUT "system of systems" capability. Components will be integrated in an architecture that ensures interoperability and functionality for increased performance at the soldier and unit level in the MOUT environment. The full exploitation of technologies will be achieved by the development of tactics, techniques, and procedures (TTPs) to employ new capabilities.

UNITED STATES ARMY

A series of ten quarterly squad/platoon level experiments conducted between 2QFY98 and 3QFY99 assessed approximately 125 technology candidates against specific joint user requirements. Two joint Army/United States Marine Corps company-level experiments were held in 4QFY99, including approximately 30 of the most tactically viable technologies from the squad/platoon experiments.

Several successful technologies are in transition planning and one technology—the Rifle Launched Entry Munition—has been transitioned to the PM Small Arms via the Warfighter Rapid Acquisition Program. The MOUT ACTD culminating demonstration will take place in 4QFY00 at the Joint Readiness Training Center at Fort Polk, LA. It will demonstrate the collective military utility of the MOUT ACTD "system of systems" at the battalion level. The ACTD residual/interim capability will be provided to the participating operational units (10th Mountain Division and 2nd Marine Division), and supported for extended user evaluation in FY01-02. The MOUT ACTD integrated "system of systems" approach will greatly improve operational effectiveness in the MOUT environment.

Rapid Terrain Visualization (RTV) Advanced Concept Technology Demonstration (ACTD) (1997–2001)

The objective of the Rapid Terrain Visualization (RTV) ACTD is to demonstrate technologies and infrastructure that meet the Army requirement for rapid generation of digital topographic data (DTD) to support emerging crisis or contingencies. DTD includes digital terrain elevation data, feature data, and imagery. The area coverage and timeliness requirements for DTD are:

- 20 x 20 kilometer area in 18 hours
- 90 x 90 kilometer area in 72 hours
- 300 x 300 kilometer area in 12 days

The resolution requirement for elevation data is Level III (10-meter grid spacing) over the entire area of interest with several smaller inserts containing higher resolution data with

a grid spacing of three meters (Level IV) or one meter (Level V). The resolution requirement for feature data is that the data are sufficient in content and detail to accomplish specific, user-defined tasks (terrain analysis, visualization, and simulation).

The RTV ACTD will demonstrate a contingency capability for rapid collection of high-resolution digital topographic elevation data using Interferometric Synthetic Aperture Radar (IFSAR) and Light Distance and Ranging (LIDAR) sensors on a DeHavilland DHC-7 aircraft. Rapid processing of the IFSAR sensor data will be accomplished in real time onboard the aircraft. A fine-resolution SAR image, orthorectified using the elevation data, will provide a 3-D image map with very high geo-spatial accuracy. In a parallel effort using ground-based workstations, feature data will be generated from multi-spectral imagery collected by commercial and government sensor systems and from IFSAR data. An integrated software package for rapid, semi-automated extraction and attribution of a minimum set of key topographic features will be developed.

Theater Precision Strike Operations (TPSO) Advanced Concept Technology Demonstration (ACTD) (1997–2003)

The TPSO ACTD will address the CINC United Nations Command/Combined Forces Command's requirement for a significantly improved capability to plan and direct theater-level counterfire and precision engagement operations. This will be accomplished by providing enhanced real time synchronization of U.S. and Korean assets between the Forward Line of Own Troops and the Forward Boundary, which is under the control of the CFC Ground Component Commander.

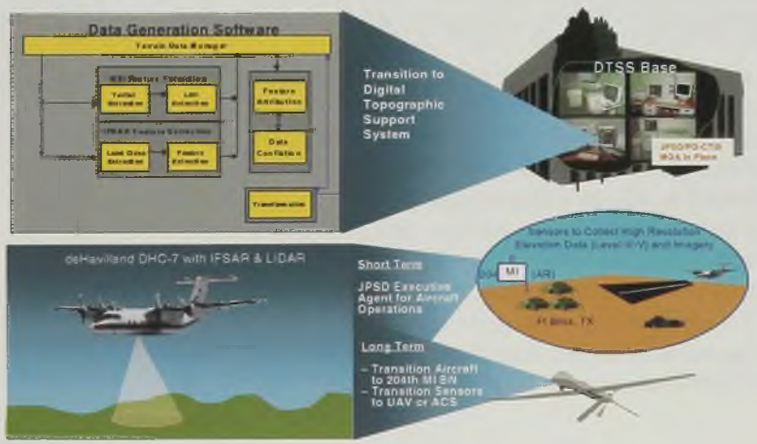
Specific TPSO ACTD objectives are to provide enhanced:

- Command and control, and strike planning processes
- Joint and coalition interoperability
- Capability to transition from the current deployed force structure to a reinforced structure

To accomplish the mission and fulfill the objectives, TPSO will develop and leave behind automated and streamlined Deep Operations Coordination Cell (DOCC) processes; integrated Joint Command, Control, Communications, Computers and Intelligence (C4I); new tactics, techniques and procedures; and an organic training infrastructure. These capabilities will allow the Ground Component Commander (GCC) to coordinate with other component commanders, visualize the battlefield, and direct operations.

TPSO will participate in three theater exercises each year, Foal Eagle, RSO&I, and SummerEx, integrating prototype capabilities during each. Ulchi Focus Lens will be the major demonstration each year in which all prototypes are integrated and a warfighter evaluation is conducted. Other services will participate to the level they determine is appropriate for the scenario. TPSO will participate in other experiments and activities, such as Joint EFX and AWEs, as appropriate.

The Director, Joint Precision Strike Demonstration (JPSD) Project Office, Ft. Belvoir, VA, is responsible for the overall conduct of the ACTD. The Deputy Director, Depth and Simultaneous Attack Battle Lab, Ft. Sill, OK, is responsible for the detailed planning and integration of the demonstrations. The Operations Officer, Eighth Army, will provide manpower and other theater resources and be the recipient of the ACTD leave-behinds. The TPSO ACTD was the Army's number one priority FY98-start ACTD. It is a six-year program with approximately $92M budgeted through FY03.



Air/Land Enhanced Reconnaissance and Targeting (ALERT) Advanced Technology Demonstration (ATD) (1998–2001)

The ALERT ATD will demonstrate on-the-move, automatic-aided target acquisition and enhanced identification, through the use of a second-generation forward-looking infrared sensor (FLIR)/multi-mode laser sensor suite. Second-generation FLIR and multi-function laser data will be fused to enable large search areas to be covered with high-targeting accuracy during high-speed flight or mobile ground operations.

Range profiling of the highest-priority detections will dramatically reduce false alarms and provide enhanced target identification. This technology will provide a dramatic increase in performance over current automatic target cues (ATC), such as the Comanche ATC, that rely on a single infrared sensor and have limited capability to distinguish target types, are limited by false alarms, and are severely degraded in on-the-move operations. The ALERT ATD supports battlefield digitization.

Advanced Night Vision Goggles (ANVG) Advanced Technology Demonstration (ATD) (2000–2003)

This effort will develop and demonstrate the Air Warrior Operational Requirements Document (ORD) requirement for an integrated 100-degree FOV helmet-mounted night vision goggles. The ANVG will significantly improve the aviator's flight safety, situational awareness, and night pilotage capabilities under adverse weather and conditions during military operations in urban terrain (MOUT). The ANVG will provide an ultra-wide, 40-degree-by-100-degree field of view, with better than 50% resolution improvement over current averages. It will feature an integrated heads-up display for aircraft symbology.

Low-halo tube technology will provide more effective navigation and improved safety in MOUT operations. The ANVG will be a modular horizontal technology integration (HTI) design that can also meet requirements for Mounted Warrior and Land Warrior, allowing head mounting for night driving, navigation, or hand-held weapon usage. In addition, for the dismounted application, an uncooled or short wave infrared (SWIR) FLIR camera will be added to the helmet-mounted assembly. This will provide thermal image insert to the image intensifier to enhance target detection performance and complement the I2 performance.

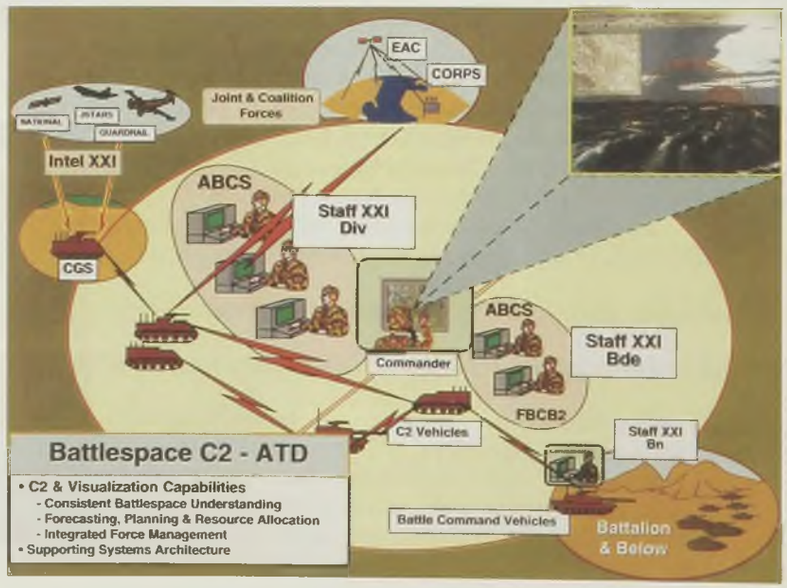
Battlespace Command and Control (BC2) Advanced Technology Demonstration (ATD) (1997–2000)

The objective of the Battlespace Command and Control (BC2) ATD is to demonstrate, through modeling, simulation, and experimentation with the user, critical solutions that will lead to a command and control and battlefield visualization prototype. This prototype will provide software tools and architecture to support the following for the commander and staff:

- Consistent battlespace understanding
- Forecasting, planning, and resource allocation
- Integrated force management

These capabilities will be integrated into the C4I systems architecture at battalion through division. Interoperability with corps/joint/allied assets is a goal. This ATD will also explore the insertion of developed C2/BV software into corps and echelons above corps. The BC2 ATD will provide C2/BV applications to the Rapid Terrain Visualization ACTD.

BC2 ATD will also provide technology options for upgrading on the Army Battle Command System applications, including Maneuver Control System and Force XXI Battle Command Brigade and Below. It will also provide system and operational



architectures that will reduce reaction and decision times. The Battlespace Command and Control (BC2) ATD supports battlefield digitization.

Command Post XXI (CP XXI) Advanced Technology Demonstration (ATD) (2000–2004)

This ATD will develop and demonstrate command and control applications for a functionally and physically agile, rapidly deployable, split-based headquarters (HQS). It will enable commanders to execute distributed operations from the high-end spectrum of war to humanitarian assistance. The goals of the CP XXI program include the following:

- C2 tools for very rapid development of course of action (COA), COA analysis (COAA), wargaming, and execution monitoring; and
- Enterprise information and mobile adaptive computing capabilities, enabling C2 systems to conduct operations on the move by the commander and his staff.

This program will focus on improving the combat capabilities of the heavy mechanized force, but will feature scaleable products for all echelons. The following technologies and capabilities will be investigated/integrated and matured to meet the requirements of CP XXI:

- Automated course of action (COA) technologies to support battle command planning.
- A COA critique capability will be developed and wargaming of the selected plan will be provided.
- Integrated intelligent agents to autonomously retrieve and display out-of-tolerance information to assist the commander during the execution phase of operations.
- Multi-function workstations that can perform more than one battlefield functional role.
- Enterprise information management concepts, commercial technologies such as data mining, data warehousing, and web technologies will assist in meeting the information needs of the command post just as they have in large corporations.
- Mobile adaptive computing technologies to enable on-the-move operations, such as middleware solutions, enabling C2 applications to incrementally reduce functionality but not fail as communications links degrade.

The CP XXI ATD supports: PM ATCCS, FATDS and CS.

Integrated Situation Awareness and Targeting (ISAT) Advanced Technology Demonstration (ATD) (1999–2002)

The Army's Integrated Situation Awareness and Targeting (ISAT) program will develop integrated system concepts to enhance the warfighting effectiveness and efficiency of the recipient weapon system/team. ISAT will demonstrate an airborne multi-spectral warning suite with precision location capabilities. ISAT will also demonstrate tactical EW's role in information and intelligence warfare (I2W) and how it can assist the crew and commander on the modern battlefield.

Networking platforms that are equipped with passive detection systems and accurate space/time reference systems increases the number of information-gathering sensors in the tactical-level battlespace. This provides the warfighter with an unambiguous picture of the electronic battlefield. The cooperative integration of the radar, missile, and laser warning spectrums will produce this "picture," enabling reduced decision timelines for defensive/offensive actions, rerouting/threat avoidance, target acquisition/ID, and anti-fratricide.

Operationally, ISAT will provide our warfighters at the crew level and above with a significant advantage. We will increase awareness of the environment around the aircraft and at higher echelons. This enables better and more rapid decision-making while on the move. Increased awareness will also reduce risk to warfighters, whether dispersed or in close proximity. The multi-spectral warning suite will enhance the detectability of targets across the battlespace, improving engagement ranges and providing other options for enemy suppression. The precision-emitter location capability will increase the effectiveness and efficiency of the warfighter. These advances will also aid the warfighter in the areas of combat identification and system/team survivability.

Logistics Command and Control (Log C2) Advanced Technology Demonstration (ATD) (1999–2003)

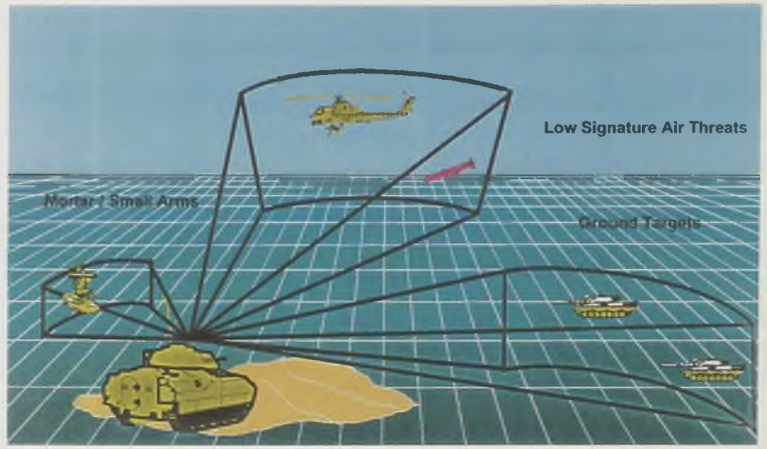
The Logistics Command and Control (Log C2) Advanced Technology Demonstration (ATD) will revolutionize the tactical decision making process for Army logisticians, through development, demonstration, and transition of software products that enhance combat service support (CSS) decision-making capabilities. The Log C2 ATD will attain real-time planning and situation-data visualization by interfacing with current and emerging CSS systems.

In addition, the Log C2 ATD will enable cross-echelon and cross-battlefield functional area collaborative planning. The Log C2 ATD will provide data to commanders that enhances the planning of future operations and the execution of current operations. These enhancements will cut planning times and enable CSS information to be an enabler in the one-hour Force XXI decision cycle. Complete access to automated CSS data will be available, down to the unit level. The Log C2 ATD supports the Combat Service Support Control System (CSSCS).

Multi-function Staring Sensor Suite (MFS3) Advanced Technology Demonstration (ATD) (1998–2003)

This ATD will demonstrate a modular, re-configurable Multi-function Staring Sensor Suite (MFS3) that integrates multiple advanced sensor components, including staring infrared imager, a multi-function laser, and acoustic arrays. The MFS3 will provide ground vehicles, amphibious assault vehicles, and surface ships with a compact, affordable sensor suite for long range non-cooperative target identification, mortar/sniper fire location, and air defense against low signature targets.The infrared imaging system will be configured to accommodate either visible-to-mid-infrared or far-infrared focal plane arrays. As single focal planes capable of operating across the full optical spectrum mature, these may be inserted into the assembly. The staring infrared sensor will operate at high field rates to allow sniper and mortar detection, in addition to the conventional target acquisition functions. Integration of a multi-function, multi-wavelength laser system will incorporate the following:

- Ranging
- Range mapping
- Target profiling



- Laser designation to support target location
- Target cueing
- Aided target identification
- Target designation

An acoustic array will provide target cueing, location, and assist in automated targeting functions. The MFS3 supports: future scout cavalry system, future infantry vehicle, future combat system.

Multi-functional On-the-move Secure Adaptive Integrated Communications (MOSAIC) Advanced Technology Demonstration (ATD) (2000–2004)

The Multi-functional On-the-move Secure Adaptive Integrated Communications (MOSAIC) ATD will focus on integrating a highly adaptive communications infrastructure to support the seamless flow of multimedia services across terrestrial and space-based platforms. The MOSAIC ATD will leverage leading-edge technology developed by government and commercial research programs. The goal of this ATD is to provide mobile communications that support battle command infrastructure mobility (e.g., support a dispersed command post to include jump tactical operations center scenarios and isolated enclaves). Also involved will be a wireless communications architecture that supports the following:

- Multimedia applications
- Quality of service (QoS) for streamed services

- Ad-hoc networking
- Bandwidth management
- Traffic scaling

The MOSAIC ATD will demonstrate that this networked communication system architecture can enable a commander to disperse command post elements quickly, support dispersed operations and provide a mobile reach-back capability linked through the airborne communications node (ACN) or space-based platforms. The MOSAIC ATD also supports battlefield digitization efforts.

Multi-mission Common Modular Unmanned Aerial Vehicle Sensors (MMCMUAV) Advanced Technology Demonstration (ATD) (1998–2001)

The Multi-Mission Common Modular Unmanned Aerial Vehicle(MMCMUAV) Sensors ATD will demonstrate modular and interchangeable electro-optic/infrared (EO/IR) and integrated moving-target-indicator (MTI)/synthetic aperture radar (SAR) payloads for future tactical and short-range UAVs. These advanced, modular payloads will be form/fit/interface-compatible and share common electronics, data link, and data compression.

The common modular approach will include common down link data protocols for delivering image intelligence products to tactical control stations and common ground stations. These advanced sensor payloads, coupled with ground station automated processing, will provide enhanced reconnaissance, surveillance, battle damage assessment, and targeting for brigade and below-maneuver forces.

Tactical Command And Control (C2) Protect Advanced Technology Demonstration (ATD) (1998–2002)

The Tactical C2 Protect ATD will focus on the Army's ability to protect modern, commercial-based tactical information networks, components, and data. The objectives of the ATD are the following:

- Develop, integrate, and validate hardware/software tools, tactics and procedures that will secure the systems and networks of the tactical internet and the first digitized division; and to
- Develop methods for conducting information warfare.

The ATD will leverage existing commercial off-the-shelf (COTS) technology to the maximum extent and Department of Defense programs that target network security technology. It will develop tools in cases where COTS technology does not satisfy tactical constraints. The approach will be to develop tactical network protection and attack/assessment capabilities, then use the attack/assessment techniques against the protection mechanism to determine the effectiveness of both. The seamless security architecture developed will be an integrated solution, providing advanced network-access control, intrusion detection, and response mechanisms within tactical communications networks. The Tactical C2 Protect ATD supports battlefield digitization.

Overmatch Capabilities

In both high-intensity combat environments and Operations Other Than War (OOTW), the close combat and precision engagement weapons systems employed by the United States Army have proven vastly superior to those of real and potential enemies. This advantage is enhanced by the Information Dominance capabilities provided by intelligence and C2 architectures, and results in a degree of superiority known as "Overmatch." Overmatch is defined as "an advantage in combat capabilities over current and potential opponents by virtue of superior combat systems that employ advanced technologies." Such dominance confers a tremendous deterrent value to Army forces, and should deterrence fail, leaves them without equal in ground combat operations.

Several key systems contribute to Overmatch Capabilities. Major combat systems include the Abrams tank, Bradley Fighting Vehicle, Longbow Apache and Black Hawk helicopters, the Multiple Launch Rocket System (MLRS), and the Patriot air defense system. Supporting systems include precision engagement weapons such as Javelin and the Brilliant Anti-Tank (BAT) and Sense and Destroy Armor (SADARM) munitions. Together, these systems provide Army forces with a qualitative advantage in equipment over potential adversaries across the full range of operational environments.

Current combat systems overmatch must not only be retained but enhanced through tailored, on-going improvements. The Army is seeking to maintain its overmatch capabilities by funding improvements to its current fleet of tanks, armored vehicles, and helicopters. It is developing new, more lethal munitions to increase precision strike capabilities. In the next decade, the Overmatch Capabilities of Army forces will be further enhanced with the fielding of the Highly Mobile Artillery Rocket System (HIMARS), Hornet, Land Warrior, and others. This program of upgrades and new procurement will ensure the predominance of Army forces well into the 21st Century.

CONCEPT EXPLORATION

Direct Fire Lethality ATD
Low Cost Precision Kill ATD
Mine Hunter/Killer ATD
Precision Guided Mortar Munition ATD

PROGRAM DEFINITION AND RISK REDUCTION

Crusader
Objective Individual Combat Weapon (OICW)

ENGINEERING AND MANUFACTURING DEVELOPMENT

Air Warrior
Bradley Fire Support Team (BFIST) Vehicle
Excalibur 155mm Precision-Guided Extended Range Artillery Projectile Family
Guided Multiple Launch Rocket System (GMLRS)
High Mobility Artillery Rocket System (HIMARS)
Land Warrior (LW)
Lightweight Laser Designator Rangefinder (LLDR)
Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW)
Striker
Theater High Altitude Area Defense (THAAD) System
TOW Fire and Forget
TOW Improved Target Acquisition System (ITAS)
Wolverine
XM777 Joint Lightweight 155mm Howitzer (LW155)

PRODUCTION, FIELDING/DEPLOYMENT, AND OPERATIONAL SUPPORT

Abrams
Apache Longbow
Armored Security Vehicle (ASV)
Army Tactical Missile System (Army TACMS) Block I and IA
Army Tactical Missile System (Army TACMS) Block II and Brilliant Anti-Armor Submunition (BAT)
Avenger
Bradley Linebacker
Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
Close Combat Tactical Trainer (CCTT)
Driver's Vision Enhancer (DVE)
Grizzly
Hercules
High Energy Laser System Test Facility (HELSTF)
Hornet
HYDRA 70 Rocket System
Integrated Family of Test Equipment (IFTE)
Javelin
Joint Service Lightweight Integrated Suit Technology (JSLIST)
Long Range Advanced Scout Surveillance System (LRAS3)
Longbow HELLFIRE
Mortar (120mm)
Multiple Launch Rocket System (MLRS)
Night Vision (NV) Image Intensification (I2)
Patriot
Second Generation Forward Looking Infrared (FLIR)
Selectable Lightweight Attack Munition (SLAM)
Sense and Destroy Armor (SADARM)
Small Arms
Stinger
Tank Main Gun Ammunition

Abrams

UNITED STATES ARMY

MISSION
Provide heavy armor superiority on the battlefield.

DESCRIPTION AND SPECIFICATIONS
The Abrams tank modernization strategy supports the Army Vision. The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, and shock effect. The 105 mm main gun on the M1 and IPM1, and the 120 mm main gun on the M1A1 and M1A2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces in a highly lethal battlefield. Additional features of the M1A1 are increased armor protection; suspension improvements; and a nuclear, biological, and chemical (NBC) protection system that increases survivability in a contaminated environment. The M1A1 with Applique consists of a M1A1 with integrated Applique+ computer. The M1A1 "D" modification scheduled for 1535 M1A1s adds far-target-designate capability to complement the Applique+ computer.

The M1A2 program provides the Abrams tank with the necessary improvements in lethality, survivability, and fightability required to defeat advanced threats. The M1A2 includes a commander's independent thermal viewer, an improved commander's weapon station, position navigation equipment, a distributed data and power architecture, an embedded diagnostic system, and improved fire control system. The M1A2 system enhancement program (SEP) adds second-generation thermal sensors and upgrades processors/memory to enable the M1A2 to use the Army's common command and control software enabling the rapid transfer of digital situational data and overlays. The Abrams modernization strategy also includes an engine program and parts obsolescence program, which will reduce O&S costs and logistical footprint associated with the Abrams MBT.

	M1/IPM1	M1A1	M1A2
Length:	32.04 ft	32.04 ft	32.04 ft
Width:	12.0 ft	12.0 ft	12.0 ft
Height:	7.79 ft	8.0 ft	8.0 ft
Top speed:	45.0/41.5 mph	41.5 mph	41.5 mph
Weight:	61.4/62.8 tons	67.6 tons	68.4 tons
Armament:	105 mm	120 mm	120 mm
Crew:	4	4	4

FOREIGN COUNTERPART
France: Leclerc; Germany: Leopard 2; Israel: Merkava Mk. 3; Italy: C1 Ariete; Russia: T-64, T-72, and T-80; United Kingdom: Challenger 2.

FOREIGN MILITARY SALES
Egypt: 555 M1A1 Kits, Kuwait: 218 M1A2s, Saudi Arabia: 315 M1A2s.

PROGRAM STATUS
Production of the M1A2 has entered the fourth year of a five-year, multi-year procurement. The total M1A2 fleet is projected to be 1,174 vehicles. The modification of 1,535 M1A1s to the M1A1D configuration occurs primarily in the ongoing Abrams integrated management overhaul program. A sale of 100 M1A1 kits to Egypt is pending.

PROJECTED ACTIVITIES
1QFY00 Complete follow-on operational test and evaluation of the M1A2 system SEP at Ft. Hood.
2QFY00 Participate in the Force XXI Battle Command Brigade and Below limited user test II with the M1A1 with Applique+ tanks.
4QFY00 M1A2 SEP and M1A1D first unit equipped (4th Infantry Division).

PRIME CONTRACTORS
General Dynamics (Sterling Heights, MI; Warren, MI; Muskegon, MI; Scranton, PA; Lima, OH; Tallahassee, FL)

* See appendix for list of subcontractors

Air Warrior

UNITED STATES ARMY

MISSION
Improve the lethality, survivability, mobility, and sustainment of aviators in combat; integrate all aviation life support equipment (ALSE) and mission equipment into an aircrew ensemble that enhances aircrew cockpit synergy and mission capability.

DESCRIPTION AND SPECIFICATIONS
Air Warrior (AW) is a modular system, employing a "total systems" approach to aircrew items that reverses past practices. In the past, the separate development and application of ALSE resulted in a layered, non-integrated assemblage of protective/survival gear normally carried or worn by the aircrew member. AW can be tailored for varying missions, aircraft types, crew position, climate, and level/type of threat protection. AW will effectively integrate components to maximize human performance. The program goal is to ensure aviators and crewmembers are able to safely operate aircraft unencumbered by their protective/survival gear equipment. Components of Air Warrior include: the modular integrated helmet display system, electronic data manager, microclimatic cooling system, combat identification, chemical and biological protection, body armor, survival items for escape and evasion, over-water survival items, and an interface to the aircraft platform. Equipment will also maximize the capabilities currently planned for the RAH-66 Comanche as well as future modernization improvements to any Army aircraft.

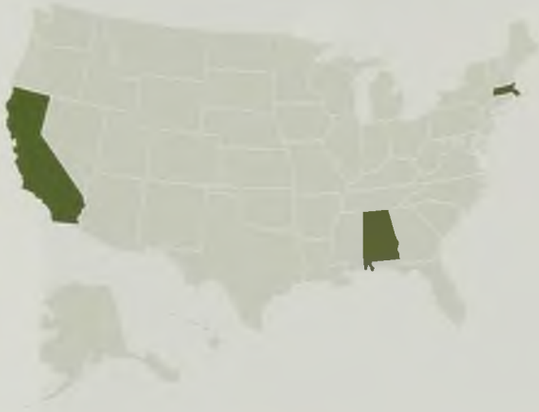
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
- Air Warrior completed milestone II on December 7, 1998, and is in its first year of a three-year engineering and manufacturing development phase.
- Evaluations of the Air Warrior microclimatic cooling system revealed that mission performance in mission-oriented protective posture IV gear at 100°F and 50% relative humidity increased from 1.6 hours to at least 6 hours.
- The Air Warrior MANPRINT team received the MANPRINT Practitioner of the Year Award in Technology Research for their efforts in human performance and human figure modeling.

PROJECTED ACTIVITIES
4QFY00 Critical design review.
2QFY00–1QFY02 System verification testing.
1–2QFY02 Developmental testing.
2–4QFY02 Operational testing.
1QFY03 Milestone III decision scheduled.
FY03 First unit equipped.

PRIME CONTRACTORS
Air Warrior does not have a prime contractor. The Project Management Office of Aircrew Integrated Systems serves as the program integrator (Huntsville, AL).



* See appendix for list of subcontractors

Conduct Decisive Operations

Apache Longbow

UNITED STATES ARMY

MISSION
Conduct rear, close, and deep operations and deep precision strikes; provide armed reconnaissance and security when required in day, night, and adverse weather conditions.

DESCRIPTION AND SPECIFICATIONS
Apache Longbow is a development and acquisition program for a millimeter-wave radar air/ground targeting system capable of being used day, night, in adverse weather, and through battlefield obscurants. Longbow consists primarily of the integration of a mast-mounted millimeter-wave fire control radar (FCR), a radar frequency interferometer, and a radar frequency fire-and-forget HELLFIRE missile on the Apache. Longbow's digitized target acquisition system provides automated detection, location, classification, prioritization, and target handover.

The AH-64D cockpit is redesigned to digitize and multiplex all systems. MANPRINT crew stations have multi-function displays to reduce pilot workload and increase effectiveness. The modernized Apache heavy attack team will now be able to provide a truly "coordinated" rapid-fire capability (servicing 16 separate targets within one minute) to the maneuver force commander on a 24-hour basis in day, night, and adverse weather conditions.

Apache Longbow will add significant warfighting capability to the combined arms team through increased survivability, lethality, and versatility, as well as through long-term reliability improvements.

Combat Mission Speed: 167 MPH
Combat Range: 300 miles
Combat Endurance: 2.5 hours
Mission Weight: 16,600 lb
Armament: Hellfire missiles, 2.75" rockets and 30 mm chain gun
Crew: 2 (pilot and co-pilot gunner)

FOREIGN COUNTERPART
No known foreign counterpart

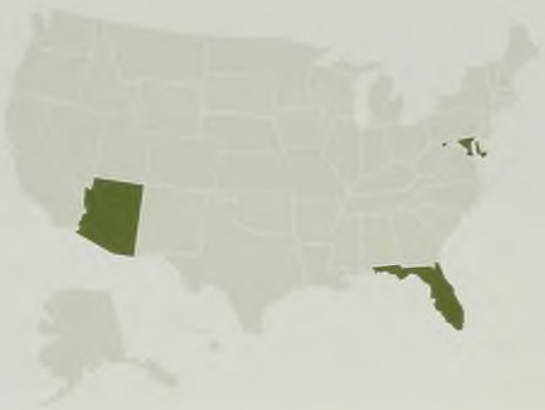
FOREIGN MILITARY SALES
The Netherlands, Singapore; commercial sale: United Kingdom.

PROGRAM STATUS
The Apache Longbow system completed full scale development and entered the production and deployment phase in October 1995. The first production model aircraft was delivered in March 1997. Technical successes during the proof-of-principle phase in 1990, initial operational test and evaluation, and the Army's Warfighting Experiment at the National Training Center in the spring of 1997, proved the AH-64D to be an operationally effective and suitable weapon system. As expected, Longbow Apache was far more effective in defeating threat armored vehicles and more survivable against threat air defense weapons than the AH-64A. The current program objective calls for the remanufacture of 530 AH-64A Apaches, of which 500 will be equipped with FCR and the upgraded T701C engine.
1QFY96 Completed full-scale development and began production and deployment.
2QFY97 Delivered first production model aircraft.
2QFY00 Completed multi-year II negotiations.

PROJECTED ACTIVITIES
FY00 Begin Second-Generation Forward-Looking Infrared (FLIR) development.

Continue Apache Longbow fielding.

PRIME CONTRACTORS
Airframe: Boeing (Mesa, AZ)
Fire Control Radar: Lockheed Martin (Orlando, FL); Northrop Grumman (Linthincum, MD)



* See appendix for list of subcontractors

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Armored Security Vehicle (ASV)

UNITED STATES ARMY

MISSION
Support the military police (MP) missions of law enforcement, area security, battlefield circulation, and enemy prisoner-of-war operations in war and for operations other than war.

DESCRIPTION AND SPECIFICATIONS
The Armored Security Vehicle (ASV) will be fielded to combat-support MP companies engaged in the above missions, as well as to heavy division MP companies. It is a turreted, light-armored, all-wheeled drive vehicle that provides increased ballistic and landmine protection to the MPs. Its primary weapons are the 40mm MK-19 grenade machine gun and the M-2 .50 caliber machine gun. The fully enclosed turret includes a day/night sight for target acquisition. The vehicle provides all-around 7.62 mm ball protection and 12.7 mm armor piercing for the crew compartment, weapons station, and ammunition storage areas. Crew size for the ASV is three MPs, with a jump seat for a fourth soldier. The ASV carries up to 3,360 lb of payload and can be transported by a C-130.

The ASV provides overhead protection against 155 mm at fifteen meters and 12 lb TNT mines in the wheel wells. Other survivability enhancements include gas particulate-ventilated face pieces, a multi-salvo smoke grenade launcher, engine fire-suppression system, an intercom with radio interface, transparent armor, and blackout capability.

FOREIGN COUNTERPART
Germany: Theissen-Henschel, The Netherlands: DAF, France: Panhard.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY99 Awarded production contract.

PROJECTED ACTIVITIES
3QFY00 Commence first production deliveries.
4QFY00 First unit equipped.

PRIME CONTRACTORS
Textron (New Orleans, LA)

* See appendix for list of subcontractors

Protect the Force

Army Tactical Missile System (Army TACMS) Block I and IA

UNITED STATES ARMY

Army Tactical Missile System (Army TACMS) Block I and IA

Overmatch Capabilities

MISSION

Provide long-range, surface-to-surface, fire support for U.S. Army corps and division operations.

DESCRIPTION AND SPECIFICATIONS

The Army Tactical Missile System (ATACMS) Block I and IA are ground-launched missile systems consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The ATACMS with APAM attacks soft targets at extended ranges. Targets include surface-to-surface missile sites, air defense systems; logistics elements; and command, control, and communications complexes. The M270 Multiple Launch Rocket System (MLRS) launcher fires ATACMS missiles to engage targets at ranges well beyond the capability of existing cannons and rockets. The ATACMS Block IA, with enhanced Global Positioning System (GPS) accuracy, has approximately twice the range of the ATACMS Block I. The ATACMS includes the following components: guided missile and launching assembly, M39; trainer, launch pod container, M68; training set, guided missile, M165; trainer, test device, guided missile, M78; modified M270 launcher; and ATACMS missile facilities.

FOREIGN COUNTERPART

The following countries possess similar missiles: Afghanistan, Bulgaria, China, Egypt, France, Iran, Iraq, Libya, North Korea, Poland, Romania, Russia, Slovakia, Syria, Vietnam, and Yemen.

FOREIGN MILITARY SALES

Greece, South Korea, and Turkey.

PROGRAM STATUS

1QFY00 Awarded Block IA full-rate production (FRP) III contract.

PROJECTED ACTIVITIES

Block IA

FY00 Complete deliveries for Block I foreign military sales (FMS) case to South Korea.
FY01 Complete deliveries for Block I FMS case to Greece.
FY02 Complete Block IA fielding.

PRIME CONTRACTORS

Lockheed Martin (Dallas, TX; Horizon City, TX)

* See appendix for list of subcontractors

Protect the Force

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Sustain the Force

Army Tactical Missile System (Army TACMS) Block II and Brilliant Anti-Armor Submunition (BAT

UNITED STATES ARMY

MISSION

Provide corps and joint task force commanders the capability to delay, disrupt, or destroy moving enemy armored forces before they can influence the close battle. Follow-on incorporation of the preplanned product improvement (P3I) Brilliant Anti-Armor Submunition (BAT) will add the capability to engage stationary enemy armored forces in their assembly areas and to destroy, neutralize, or suppress threat Surface-to-Surface Missile Transporter-Erector-Launchers (SSM TELs) and Multiple Rocket Launchers (MRLs) throughout the battlespace.

DESCRIPTION AND SPECIFICATIONS

The Army Tactical Missile System (Army TACMS) Block II is a modification of the currently fielded and combat-proven Army TACMS Block I missile family and is launched from the Multiple Launch Rocket System (MLRS) M270A1 launcher. The Block II will deliver 13 BAT or P3I BAT submunitions into deep battle at supersonic velocities. The BAT uses acoustic and infrared (IR) sensors to autonomously search for, detect, track, engage, and destroy moving tanks and other armored vehicles. The P3I BAT includes improved target acquisition capability with an upgraded dual mode (imaging IR sensor and millimeter wave radar) seeker and an enhanced warhead for increased lethality. The ATACMS Block IIA program was terminated in the FY01 President's Budget in support of the Army Vision and its modernization efforts. The decision to terminate the program was based on an assessment of affordability, operational risk, and Army priorities.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

Block II/BAT

FY99 Successfully completed production qualification testing.

FY99 Approved to enter low-rate initial production. Began developmental testing (DT).

Block II/P3I BAT

FY99 Approved to continue development. Completed design and testing of improved warhead.

PROJECTED ACTIVITIES

Block II/BAT

FY00–01 Complete DT/conduct operational testing.

FY01 Obtain full-rate production decision from the Army Systems Acquisition Review Council.

FY02 First unit equipped.

Block II/P3I BAT

FY00 Conduct captive flight and recoverable BAT tests with the new tactical prototype seeker.

FY00–02 Conduct continued development program testing.

FY02 Obtain production cut-in decision from the Defense Acquisition Board.

FY02–03 Conduct developmental testing program for MRL/TEL target set.

PRIME CONTRACTORS

Block II/BAT/P3I BAT: Lockheed Martin (Dallas, TX; Horizon City, TX)

* See appendix for list of subcontractors

Avenger

UNITED STATES ARMY

MISSION
Provide mobile, short-range, air defense protection against cruise missiles, unmanned aerial vehicles, low-flying fixed-wing aircraft, and helicopters to divisions, armored cavalry regiments, separate brigades, and corps/theater air defense brigades.

DESCRIPTION AND SPECIFICATIONS
Avenger system is a lightweight, highly mobile, and transportable surface-to-air missile/gun weapon system mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). It has a two-man crew and can operate in day or night and in clear or adverse weather conditions. The system incorporates a fully rotatable turret, operator's position with displays, fire control electronics, and standard vehicle mounted launchers which support and launch multiple Stinger missiles. Avenger can be operated remotely up to 50 meters from the fire unit and can shoot on the move. A notable upgrade to enhance capability is the slew-to-cue (STC), which is embedded into a new Avenger fire control computer (AFCC). The STC accepts digital radar track data from external sources, then automatically slews the turret to place an aerial target into the gunner's sighting field of view. The AFCC corrects significant system obsolescence issues and allows for additional system growth at minimal cost. The STC was an approved Warfighting Rapid Acquisition Program (WRAP).

Armament: Eight ready-to-fire Stinger missiles/.50-caliber machine gun
Sensors: Forward-looking infrared (FLIR) sensor/laser range finder/optical sight
Chassis: Modified heavy HMMWV
Fire control: Digital fire control computer/gyro-stabilized electronic turret

FOREIGN COUNTERPART
Russia: SA-9

FOREIGN MILITARY SALES
Taiwan

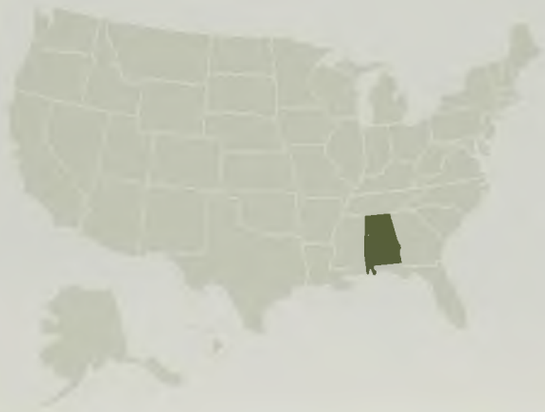
PROGRAM STATUS
FY99 Retrofit fielding of an environmental control unit/prime power unit began.

Development and production contracts have been awarded for the STC.

1QFY00 Awarded production contract for 30 Avenger fire units with STC for ARNG and production contract for 35 additional STC retrofit kits for existing fire units.

PROJECTED ACTIVITIES
- The Army plans to procure 355 Avenger fire units for the active Army and National Guard.
- In FY00, initial fielding of STC to the training base and fielding to the 4ID, Ft. Hood, TX, is planned for the First Digitized Division.
- Several modifications to the Avenger are planned for obsolescence mitigation, low observable enhancement, battlefield digitization and integration, and Advanced Integration Weapons and Control System.

PRIME CONTRACTORS
Boeing (Huntsville, AL)



* See appendix for list of subcontractors

Bradley Fire Support Team (BFIST) Vehicle

UNITED STATES ARMY

MISSION
Provide an integrated Bradley-based fire-support platform that enables company fire-support teams and battalion/brigade fire-support officers to plan, coordinate, execute, and direct timely, accurate, indirect fires.

DESCRIPTION AND SPECIFICATIONS
Plans for the Bradley Fire Support Team (BFIST) Vehicle production include both Bradley M2A2 Operation Desert Storm-based improvements and M2A3 variants. Characteristics include the following:

Length: 30.96 ft
Width: 17.04 ft with armor tiles; 15.48 ft with armor skirts
Height: 14.04 ft
Weight: 60,000 lb combat-loaded
Power train: 600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydromechanical automatic transmission
Cruising range: 250 mi
Road speed: 38 mph
Crew: 4
Vehicle armament: 25 mm Bushmaster cannon; 7.62 mm, M240C machine gun
Distribution: Armor/infantry brigades-battalions; cavalry regiments-squadrons, field artillery battalions
Current models/variants: M7 BFIST, A3 BFIST

FOREIGN COUNTERPART
Commonwealth of Independent States: BMP PRP-3, BMP PRP-4; France: AMX-10 PAC-90, AMX VTT/LT; United Kingdom: MCV-80 Warrior MAOV, FV-432 AV.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Current In low-rate initial production. The acquisition objective is 187 M7 BFIST and 122 A3 BFIST.
1QFY01 First unit equipped.
2QFY01 Full-rate production.

PROJECTED ACTIVITIES
Full-rate production ongoing.

PRIME CONTRACTORS
United Defense, L.P. (York, PA)

* See appendix for list of subcontractors

Bradley Linebacker

UNITED STATES ARMY

MISSION
Provide dedicated forward-area air defense for heavy-maneuver forces; engage and defeat a variety of threat platforms including rotary-wing aircraft, unmanned aerial vehicles, cruise missiles, and fixed-wing aircraft.

DESCRIPTION AND SPECIFICATIONS
The M6 Bradley Linebacker is a Bradley M2A2 Operation Desert Storm vehicle, modified by replacing the TOW missile launcher with a four-missile STINGER launcher (Standard Vehicle Mounted Launcher [SVML]). This modification provides the crew with the capability of conducting a ground-to-air engagement while remaining under armor protection. The linebacker also incorporates the Forward Area Air Defense Command and Control (FAADC2) software on a handheld terminal unit. By integrating Global Positioning System (GPS) and FAADC2, the Linebacker provides an automated slew-to-cue function.

Length: 30.96 ft
Width: 17.04 ft with armor tiles; 15.48 ft with armor skirts
Height: 14.04 ft
Weight: 60,000 lb combat-loaded
Power train: 600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydromechanical automatic transmission
Cruising range: 250 mi
Road speed: 38 mph
Crew: 4
Vehicle armament: 4 pod STINGER missile launcher; 25 mm Bushmaster cannon; 7.62 mm, M240C machine gun
Distribution: Air defense artillery battalions

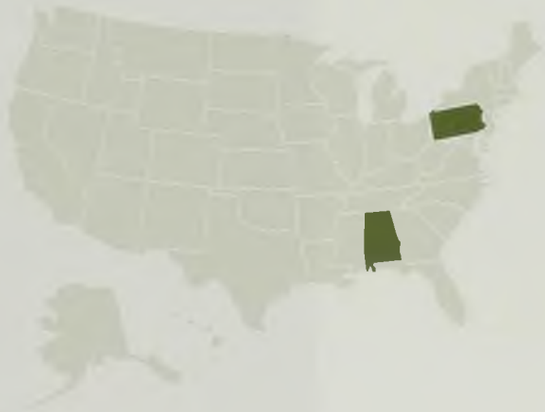
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
FY99–00 Program continues fielding and completes production of 99 systems.

PROJECTED ACTIVITIES
4QFY00 Complete fielding of first 99 systems to the 4th Infantry Division, 3rd Infantry Division, 1st Cavalry Division, and 3rd Armored Cavalry Regiment.
FY00–04 Production break.
FY04–10 Restart Linebacker production.

PRIME CONTRACTORS
Bradley M2A2ODS Chassis: United Defense, L.P. (York, PA)
Stinger Mission Equipment Package: Boeing (Huntsville, AL)



* See appendix for list of subcontractors

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)

UNITED STATES ARMY

MISSION
Provide infantry and cavalry fighting vehicles with digital command and control capabilities, significantly increased situational awareness, enhanced lethality and survivability, and improved sustainability and supportability.

DESCRIPTION AND SPECIFICATIONS
The Bradley M2A3 Infantry/M3A3 Cavalry Fighting Vehicle (IFV/CFV) has the following specifications:

Length: 30.96 ft
Width: 17.04 ft with armor tiles; 15.48 ft with armor skirts
Height: 14.04 ft
Weight: 67,000 lb combat-loaded
Power train: 600 hp Cummins VTA-903T diesel engine with GM-Allison HMPT-500-3EC hydromechanical automatic transmission
Cruising range: 250 mi
Road speed: 38 mph
Crew: 9 (3 on-board; 6 dismonnts)
Vehicle armament: 25 mm Bushmaster cannon; TOW II missile system; 7.62 mm, M240C machine gun
Distribution: armor/infantry brigades, cavalry regiments, division cavalry squadrons
Current models/variants: Bradley M2/M3A0, A2, A2ODS (Operation Desert Storm) IFV/CFVs, Bradley Fire Support Team (BFIST) Vehicle, Bradley Linebacker.

FOREIGN COUNTERPART
China: Type 90, WZ-503; Commonwealth of Independent States: BMP 1, 2, and 3; France: AMX-10P, AMX VCI; Germany: Marder 1; United Kingdom: MCV-80 Warrior, FV-432.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
In FY99, the Bradley Program Office completed upgrading Bradley A1s to the A2 configuration, thereby eliminating Bradley A1s from the Army inventory. Bradley A2 to A2ODS modification for the Active Army continues, as well as the initiation of a Bradley A0 to A2ODS conversion for the Army National Guard. The Bradley A3 completed planned live-fire vulnerability testing as well as a company-level gunnery operational test. Bradley A3 digital command and control integration continues in FY00 in preparation for a 1QFY01 initial operational test and evaluation (IOT&E).

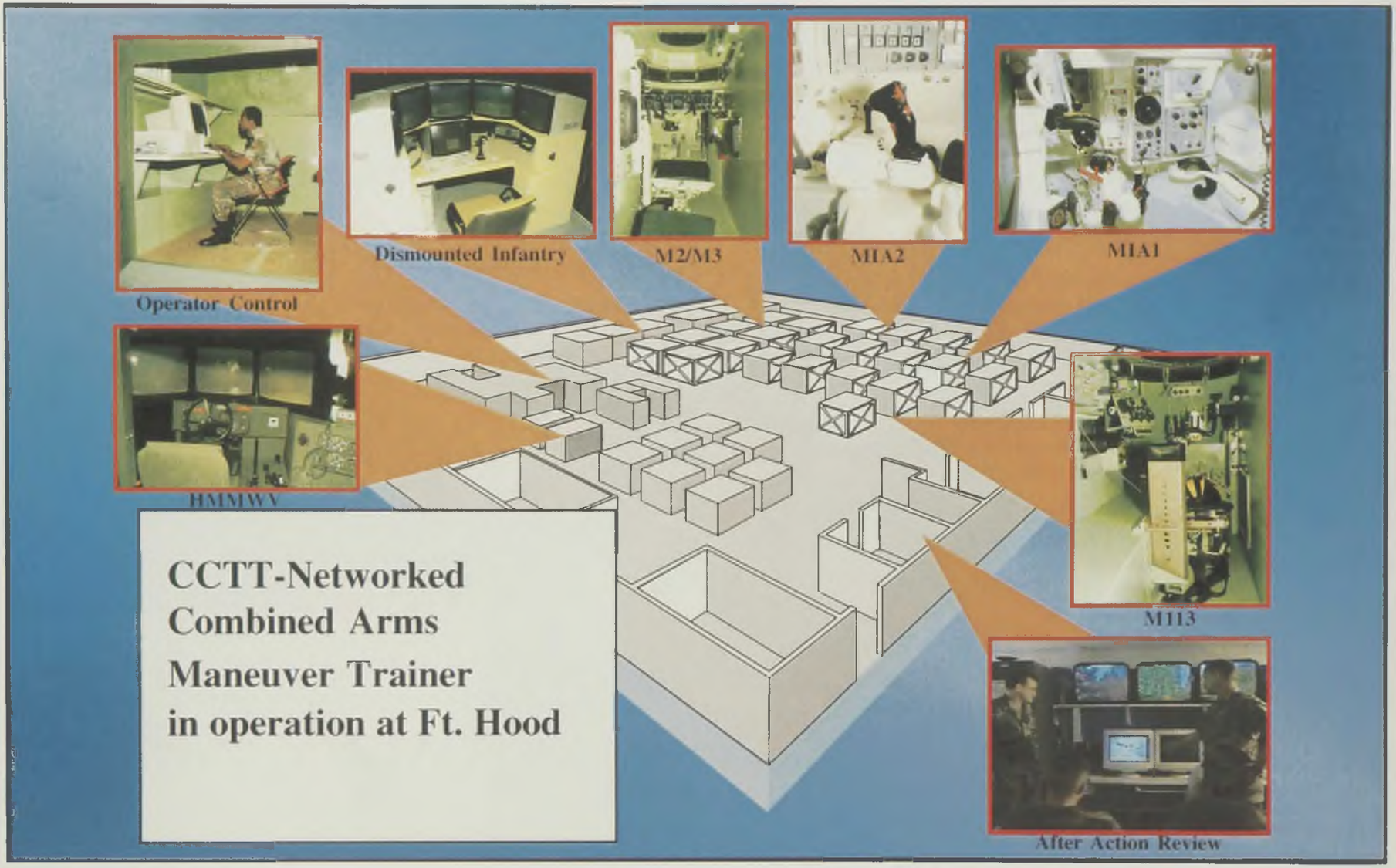
PROJECTED ACTIVITIES
FY00 Continue modification of Bradley A2s to A2ODS and fielding.
Continue ARNG AO conversion to A2ODS.
FY00 Bradley A3 first unit equipped.
FY01 Conduct an IOT&E for Bradley A3 program.
Bradley A3 production decision.

PRIME CONTRACTORS
United Defense, L.P. (San Jose, CA; Fayette, PA; York, PA; Arlington, VA)

* See appendix for list of subcontractors

Conduct Decisive Operations

Close Combat Tactical Trainer (CCTT)



Close Combat Tactical Trainer (CCTT)

Overmatch Capabilities

MISSION

Provide collective training of crews, units, and staffs within a combined arms synthetic environment.

DESCRIPTION AND SPECIFICATIONS

Close Combat Tactical Trainer (CCTT) is the first member of the Combined Arms Tactical Trainer (CATT) family of virtual, distributed interactive simulations for collective training. It supports the training of armor, mechanized infantry, and cavalry units from platoon through battalion/squadron echelon, including the staff. The primary training audience operates from both full-crew simulators and mock-up command posts. Crewed simulators—M1A1, M1A2, M2/3A2 BFV, FIST-V, M113A3, and HMMWV—are of sufficient fidelity for individuals and crews to accomplish their collective missions. Infantry platoon and squad leaders can also exit their Bradley Fighting Vehicle (BFV) and move to a dismounted infantry workstation where they can control their virtual dismounted elements.

Commanders and staff members of the training audience use computer workstations located in mock-up command posts to provide artillery, mortar, combat engineers, and logistics units to the synthetic battlefield. Semi-automated forces workstations provide additional supporting units (i.e., aviation and air defense artillery) and all opposing forces. Thus, while maneuver units (combat crews and battalion-level staff members) constitute the CCTT primary training audience, all battlefield operating systems are represented in the simulation to ensure quality training within a combined arms training environment in daylight, night, and fog conditions. CCTT's visual and terrain databases currently support desert (National Training Center), temperate (Germany), and Ft. Hood, TX. Mobile versions of CCTT are used to train the National Guard and are capable of deploying with a unit during contingency operations.

FOREIGN COUNTERPART

The United Kingdom (U.K.) Ministry of Defense is developing a counterpart system called U.K .-Combined Arms Tactical Trainer (U.K.-CATT). The U.S. and the U.K. have a memorandum of agreement covering cooperative development of CCTT and U.K.-CATT, providing for interoperability and sharing of development products.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

1QFY99 Achieved Army System Acquisition Review Committee milestone III.
2QFY99 Commenced full-rate production efforts.
1QFY00 Modified Ft. Hood site to support Battlefield Combat ID System (BCIS).
Current Use CCTT for trainup of Force XXI Battle Command Brigade and Below (FBCB2) operational test at Ft. Hood.

PROJECTED ACTIVITIES

FY00 Continue full-rate production (FRP) of CCTT modules, with fieldings to Ft. Stewart, Ft. Hood, Ft. Carson (partial), and additional mobile sets.
FY01 Field CCTT modules to Ft. Carson, Ft. Riley, and mobiles.
FY02 Field CCTT modules to sites in Germany and Korea.
FY03 Complete FRP with CCTT deliveries to Ft. Lewis.
FY00–01 Use CCTT for trainup of Force XXI Battle Command Brigade and Below (FBCB2) operational test at Ft. Hood.
FY99–03 Continue Abrams Tank system enhancement package (SEP) work.
FY00 Develop Bradley and Abrams reconfigurable variants.
FY00–01 Investigate development of additional terrain databases for Kosovo and Korea.

PRIME CONTRACTORS

Lockheed Martin (Orlando, FL)

* See appendix for list of subcontractors

Crusader

UNITED STATES ARMY

MISSION
Provide direct and general support fires to maneuver forces on the future battlefield; become the indirect fire support "system of systems" howitzer and resupply vehicle.

DESCRIPTION AND SPECIFICATIONS
The Crusader Self-Propelled Howitzer (SPH) is a 155mm self-propelled howitzer system that will increase artillery survivability, lethality, mobility, and operational capability and effectiveness through use and integration of advanced technology. The Crusader program has been restructured to improve its deployability and relevance to the Army Vision and the Objective Force while retaining all of its key performance parameters (range, rate-of-fire, mobility, and resupply). Key features of the restructured Crusader are lower weight (less than 40 tons versus 55 tons), smaller size (2 howitzers transportable in the C-5B), and a change in resupply vehicle philosophy. The lower weight and smaller size are achieved through the extensive use of titanium and composites, reduction in onboard ammunition, employment of reconfigurable armor, elimination of one road wheel, and incorporation of a lower weight automotive powerplant. Now, Crusader howitzers will be resupplied by one tracked and one wheeled resupply vehicle for each two howitzers, versus one tracked resupply vehicle per howitzer.

SPH-critical technologies and capabilities include the XM297E2 integral mid-wall cooled cannon, modular artillery charge system (MACS), automatic inductive settable multi-option fuze (MOFA), fully automated ammunition handling and loading systems, composite armor, enhanced survivability, improved mobility, and embedded training and diagnostics.

The tracked and wheeled resupply vehicles (RSV-T and RSV-W) will enable automatic transfer of ammunition and fuel to the SPH or another RSV to meet required firing rates; enable autonomous operation; and capitalize on cost and operational advantages of component commonality. RSV critical technologies and capabilities include an automated docking boom, ammunition resupply system, fuel transfer system, improved mobility, and embedded training and diagnostics. The Crusader will displace the M109A6 Paladin Self-Propelled Howitzer and the M992A2 Field Artillery Ammunition Supply Vehicle beginning in 2QFY08.

SPH
Range: 40+ km (assisted)
Rate of fire: 10–12 rd/min
Multiple round, simultaneous impact: 4–8 rd (1 SPH)
Ammo storage: 48–60 fuzed rd
Weight: 40 tons or less
Crew: 3

RSV
Automated rearm: 60 rd in less than 12 min
Automated refuel: 132–190 L/min
Range: 405–450 km
Speed: 48 mph highway; 30 mph cross country
Ammo storage: 130–200 fuzed rds
Crew: 3

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
1QFY95 Approved to commence program definition and risk reduction (PDRR) phase.
2QFY98 Conducted an in-process review and authorized manufacture of the PDRR prototype systems.
3QFY99 Delivered first RSV(-) prototype.
2QFY00 Delivered first prototype howitzer SPH 1.

PROJECTED ACTIVITIES
2QFY03 Milestone II scheduled.
2QFY08 First unit equipped.
2QFY08 Milestone III scheduled.

PRIME CONTRACTORS
United Defense, L.P. (Minneapolis, MN)

* See appendix for list of subcontractors


Protect the Force


Gain Information Dominance


Shape the Battlespace


Conduct Decisive Operations


Sustain the Force

Driver's Vision Enhancer (DVE)

UNITED STATES ARMY

MISSION
Provide drivers of combat and tactical-wheeled vehicles with unparalleled flexibility to continue day or night operations during periods of severely degraded visual conditions caused by smoke, fog, dust, or similar conditions.

DESCRIPTION AND SPECIFICATIONS
The AN/VAS-5 Driver's Vision Enhancer (DVE) thermal viewing system increases vehicle mobility under very poor driving conditions. The DVE's cost is very low, compared to other forward-looking infrared (FLIR) sensors. The DVE provides mobility under the same conditions as the target engagement sensors, enabling a critical "go vs. no go" capability. The DVE provides situational awareness, target and ambush detection, and vehicle tracking. For the first time, combat service support will be able to keep up with the warfighter.

The DVE's sensor module consists of a second-generation FLIR. The output device consists of a high-quality commercial flat-panel display and control module. The system is "driver friendly" and easy to use. DVE video imagery may be distributed to other vehicle crew members. The DVE also contains a data port for linkage to the digitized battlefield. The DVE can be easily adapted to any current or future U.S. or North Atlantic Treaty Organization (NATO) combat and tactical-wheeled vehicle, due to its horizontal technology integration features. These vehicles include the following:

- Abrams M1A2 and USMC M1A1
- Bradley M2A2 ODS and M2A3
- Command and Control Vehicle
- Family of Medium Tactical Vehicles (FMT)
- Grizzly
- Heavy Equipment Transporter System (HETS)
- Heavy Expanded Mobility Tactical Truck (HEMTT)
- Hercules
- High Mobility Multipurpose Wheeled Vehicle (HMMWV)
- M58 Smoke Vehicle
- M56 Smoke Vehicle
- Paladin
- Palletized Loading System (PLS)
- United States Marine Corps (USMC) Amphibious Assault Vehicle
- USMC Armored Vehicle Launched Bridge
- USMC Light Armored Vehicle
- Wolverine

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY97 Fielded to Bradley M2A2ODS.
3QFY98 Awarded three-year multi-year FFP.
4QFY98 Full materiel release M58.
1QFY99 Fielded to M58.
2QFY99 2nd program year award; DVE build.
1QFY00 DVE test: production qualification testing.
2QFY00 DVE test: USMC operational test and evaluation.
PM M56 customer test.

PROJECTED ACTIVITIES
4QFY00 DVE deliveries.

PRIME CONTRACTORS
Raytheon (Dallas, TX)

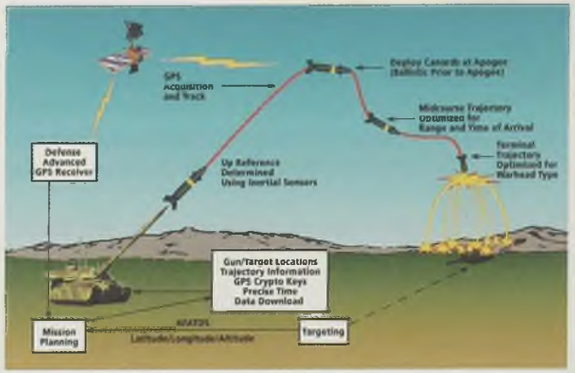
* See appendix for list of subcontractors

Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family

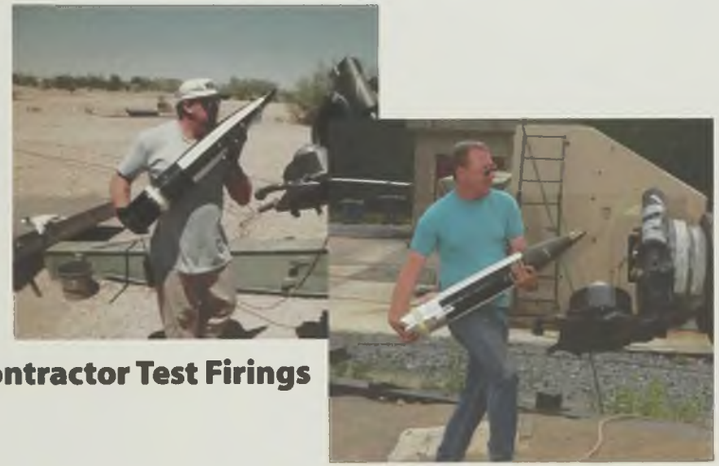
Flight Test

Submunition Dispense Test

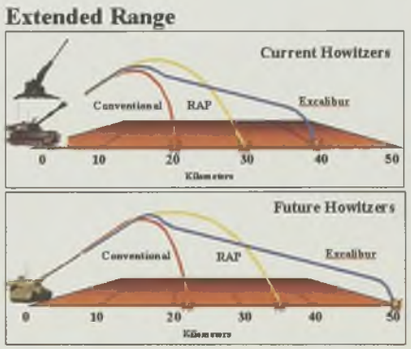
Excalibur Family of Precision Guided Artillery Projectiles



Concept of Operations



Contractor Test Firings



Contractor Test Firings

MISSION

Provide the maneuver force with improved fire support through a precision-guided, extended-range, accuracy-enhancing, more-lethal family of 155mm artillery projectiles. Excalibur permits our 155mm artillery systems to regain range overmatch while precisely engaging targets up to 47km. Excalibur is a force multiplier that increases lethality while reducing the logistical burden for light, medium, and heavy forces.

DESCRIPTION AND SPECIFICATIONS

The Excalibur, XM982 is a family of smart, 155mm modular projectiles that incorporate three unique payloads. The Dual Purpose Improved Conventional Munitions (DPICM) variant is used against personnel, materiel, light armored targets, and other area targets. The Product Improved Sense and Destroy Armor (PI-SADARM) variant will be used to engage self-propelled artillery and armored targets. The Unitary Warhead will be used against bunkers and other hardened targets. An internal Global Positioning System (GPS)-updated inertial navigation system provides precision guidance and improved accuracy. Excalibur is effective in all weather and terrain. It contains a fuzing system that is inductively set by either an enhanced portable inductive artillery fuze setter or Crusader's inductive automated fuze setter. The target, platform location, and GPS-specific data are inductively entered into the projectile's mission computer, located in the nose of the projectile.

Upon firing, Excalibur will determine its up reference using inertial sensors. A trajectory correction to optimize range and time of arrival takes place midway between apogee and the target. Upon arrival, the cargo canister is expelled and a bladder inflates, dispensing the DPICM grenades radially. Detonation occurs on impact with a shape charge jet directed downward while the body simultaneously bursts into small fragments to provide anti-personnel effects. Grenades that fail to initiate on ground impact self-destruct several seconds later. The Excalibur gun-hardened, modular projectile is also designed to accommodate two PI-SADARM submunitions or a Unitary Warhead that will penetrate 8 inches of reinforced concrete.

Caliber: 155 mm
Weight: 106 lb
Max range: 37 km (from M109A6, M198 and XM777 digital howitzers), 47 km (from Crusader)
Number of submunitions: 64 DPICMs/rd, or 2 PI-SADARM/rd, or 1 Unitary/rd

FOREIGN COUNTERPART

In FY99 Congress directed the U.S. Marine Corps to pursue an international cooperative program with the Government of Sweden to explore a Trajectory Correctable Munition (TCM) concept proposed by BOFORS and their U.S. partner, Science and Applied Technologies, Inc. A number of other European countries are also interested in joining the Excalibur or TCM efforts.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

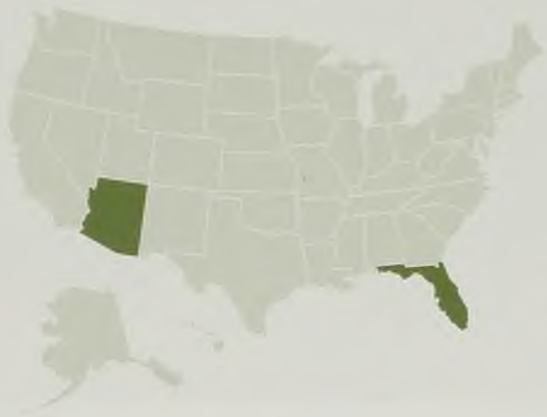
January 23, 1998 Award contract for DPICM engineering and manufacturing development (EMD).
Current Continue EMD.

PROJECTED ACTIVITIES

FY02 Begin PI-SADARM EMD.
2QFY03 Conclude development testing.
FY03 Begin Unitary warhead EMD.
2QFY04 Commence DPICM low-rate production.
1QFY06 Achieve DPICM milestone III.
3QFY06 Commence DPICM full-rate production.
4QFY06 Achieve DPICM initial operational capability.

PRIME CONTRACTORS

Raytheon (Tucson, AZ); Primex Technologies (St. Petersburg, FL)



* See appendix for list of subcontractors

Grizzly

UNITED STATES ARMY

MISSION
Provide an in-stride capability to overcome simple and complex linear obstacles.

DESCRIPTION AND SPECIFICATIONS
The Grizzly program is terminated in the FY01 President's Budget in support of the Army Vision and its modernization efforts. The decision to terminate the program was based on an assessment of affordability, operational risk, and Army priorities; however, a valid requirement still exists for a combat engineer vehicle with breeching capabilities.

The Grizzly system breaches a full-width, clear lane to allow maneuver force mobility through minefields, rubble, tank ditches, wire, and other obstructions. The Army currently has no system with these capabilities.

The Grizzly is an M1 Abrams, chassis-based system, equipped with a full-width mine clearing blade and a power-driven excavating arm. When buttoned up, a crew of two will be able to operate all systems. The vehicle contains electric drive, an advanced open systems vehicle electronic architecture, automatic depth control, and provisions for digital battlefield command and control.

FOREIGN COUNTERPART
Germany: Pionierpanzer 2, Israel: MIKI, Russia: IMR-2.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
1QFY97 Program milestone II decision.
August 11, 1999 Accomplished successful prototype rollout.
Current Completed shakedown. Undergo government testing of two Grizzly prototypes in support of a low-rate initial production (LRIP) decision. Additional activities include the maturation of Grizzly virtual prototype simulation, which is being used to reduce risk and avoid cost and schedule increases in training, testing, and production.

PROJECTED ACTIVITIES
FY00 LRIP decision.

PRIME CONTRACTORS
United Defense, L.P. (York, PA)

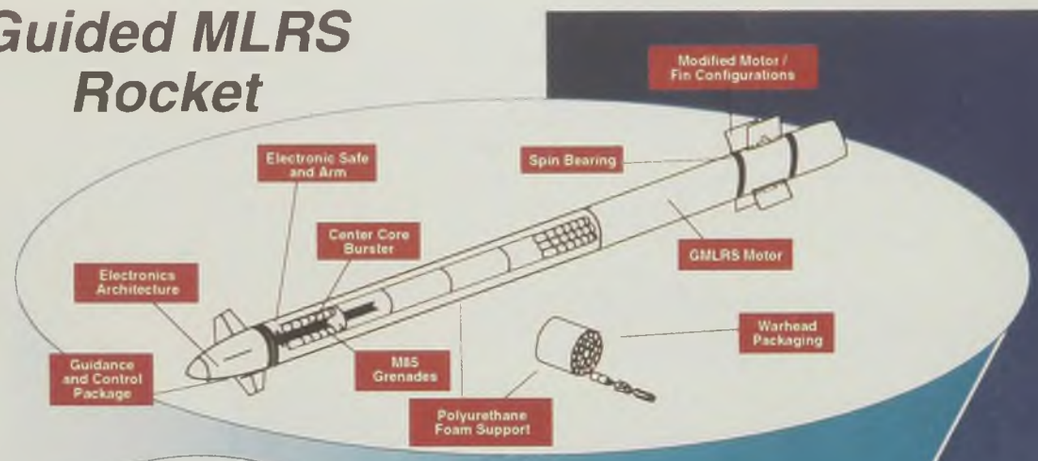
* See appendix for list of subcontractors

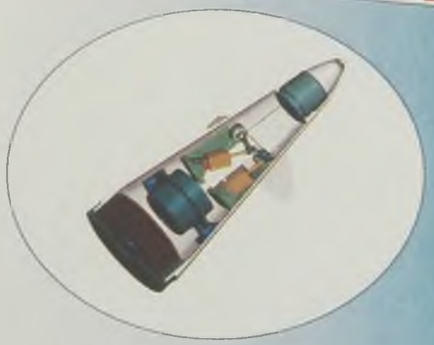
Protect the Force

Conduct Decisive Operations

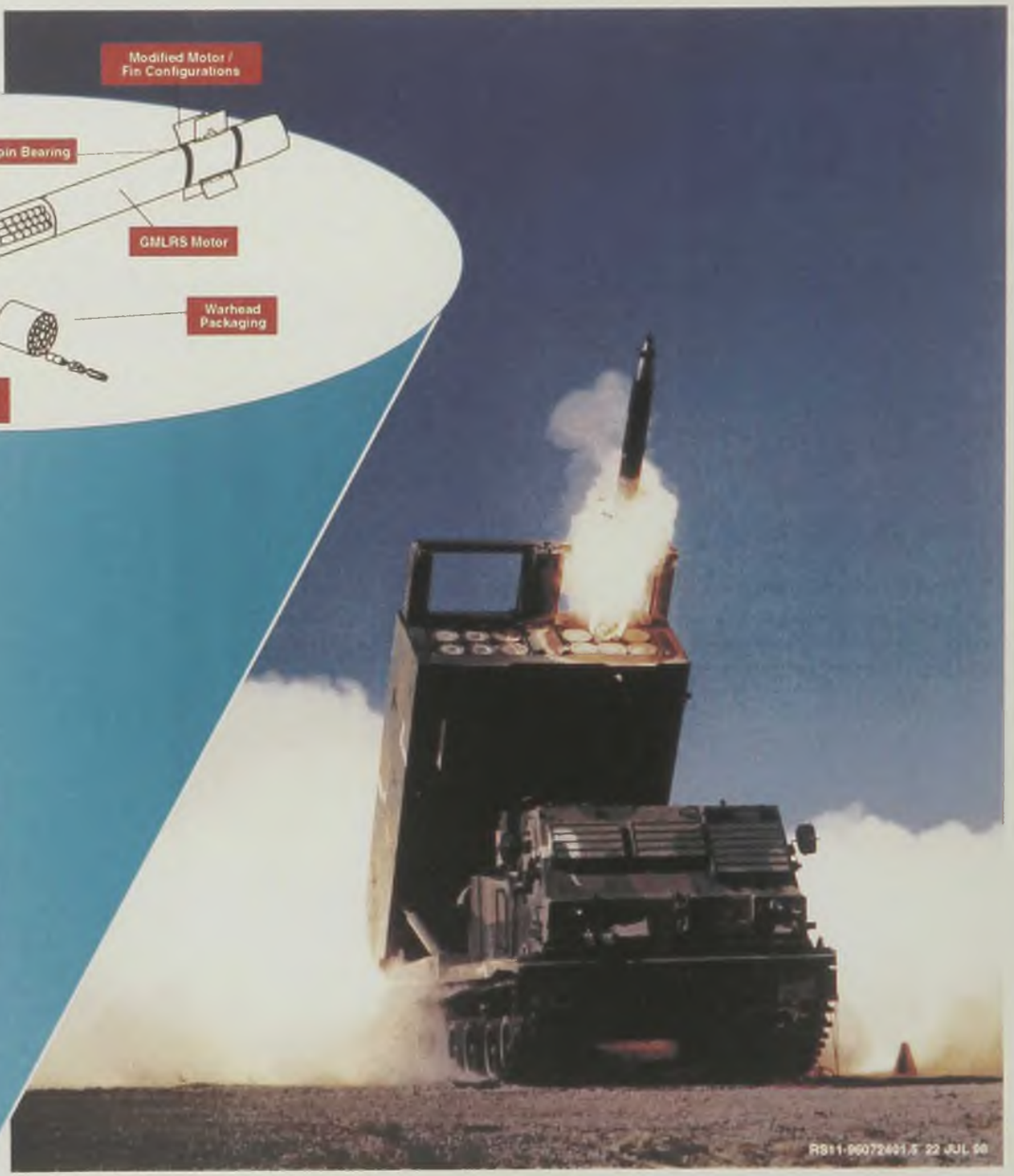
Guided Multiple Launch Rocket System (GMLRS)

Guided MLRS Rocket





	Guided
Rocket Length	3937 mm
Rocket Diameter	227 mm
Warhead Length	1686 mm
Motor Length	2251 mm
Launch Weight	??
Grenades	409 - 469
Maximum Range	60 km



Guided Multiple Launch Rocket System (GMLRS)

Overmatch Capabilities

MISSION

Provide longer-range and more accurate rockets with a lower submunition hazardous dud rate for the Multiple Launch Rocket System (MLRS).

DESCRIPTION AND SPECIFICATIONS

The Guided Multiple Launch Rocket System (GMLRS) is the next logical step in the evolution of the MLRS rocket after the Extended Range Multiple Launch Rocket System (ER-MLRS). Utilizing various components of the ER-MLRS (e.g., grenades, rocket pod, etc.), it will transform the ER-MLRS freeflight rocket into a guided rocket by incorporating a guidance and control package. This provides greater accuracy and range greater than 60 km. Control will be accomplished by four canards driven by electromechanical actuators.

Guidance will be performed by a low-cost tactical-grade inertial measurement unit (IMU) which will be aided by a Global Positioning System (GPS) receiver. Required accuracy will be met with the IMU in an independent mode. GPS is not mission-essential, but provides a further increase in accuracy when used in conjunction with the IMU. The guidance and control package in the GMLRS will form the basis for the future MLRS Smart Tactical Rocket (MSTAR) with a precision-guided smart submunition.

Warhead: Dual Purpose Improved Conventional Munition (DPICM)
Propulsion: Solid
Guidance: GPS-aided IMU
Control: 4-axis Canard

FOREIGN COUNTERPART

The Israeli Ministry of Defense is developing a ground-commanded, trajectory-correcting MLRS variant.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

1994 Commenced the Advanced Technology Demonstration (ATD) phase, which is managed by the U.S. Army Aviation and Missile Command's Missile Research, Development, and Engineering Center.
3QFY98-2QFY99 Conducted five ATD flight tests.
1QFY99 Transitioned GMLRS program to the engineering and manufacturing development (EMD) phase, which is managed by the project manager, MLRS, as an international cooperative development program with France, Germany, Italy, and the United Kingdom.
4QFY99 Successfully completed the EMD preliminary design review.

PROJECTED ACTIVITIES

4QFY00 EMD critical design review.
2QFY02 Low-rate initial production decision.
3QFY03 Initial operational test.
1QFY04 Milestone III decision.
4QFY04 Initial operational capability.

PRIME CONTRACTORS

Lockheed Martin (Dallas, TX)

* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

Hercules

UNITED STATES ARMY

MISSION
Provide towing, winching, and hoisting operations to support battlefield recovery operations and evacuation of heavy tanks and other tracked combat vehicles.

DESCRIPTION AND SPECIFICATIONS
The Hercules program is funded in the FY01 President's Budget as a recapitalization effort in support of the Army Vision. The Hercules has been type-classified as the M88A2. It is a full-tracked, armored vehicle that uses the existing M88A1 chassis but significantly improves towing, winching, lifting, and braking characteristics. The Hercules is the primary recovery support to the Abrams tank fleet, and future heavy systems such as the Grizzly (M1 Breacher), Wolverine (Heavy Assault Bridge), and heavy self-propelled artillery.

Length: 338 in
Height: 123 in
Weight: 70 ton
Speed: 29 mph w/o load, 20 mph w/load
Boom capacity: 35 ton
Winch capacity: 70 ton/300 ft
Aux. winch capacity: 3-ton/670 ft
Armament: One .50 caliber machine gun
Power train: 12 cylinder, 1,050 hp air-cooled diesel engine with 3-speed automatic transmission
Width: 144 in
Cruising range: 200 miles
Draw bar pull: 70 ton

FOREIGN COUNTERPART
There is no foreign counterpart that provides the combined weight, towing, winch, and hoist capacities of the Hercules. Many foreign nations, however, incorporate recovery systems with existing recovery chassis or main battle tank chassis.

FOREIGN MILITARY SALES
Kuwait; Egypt (co-production).

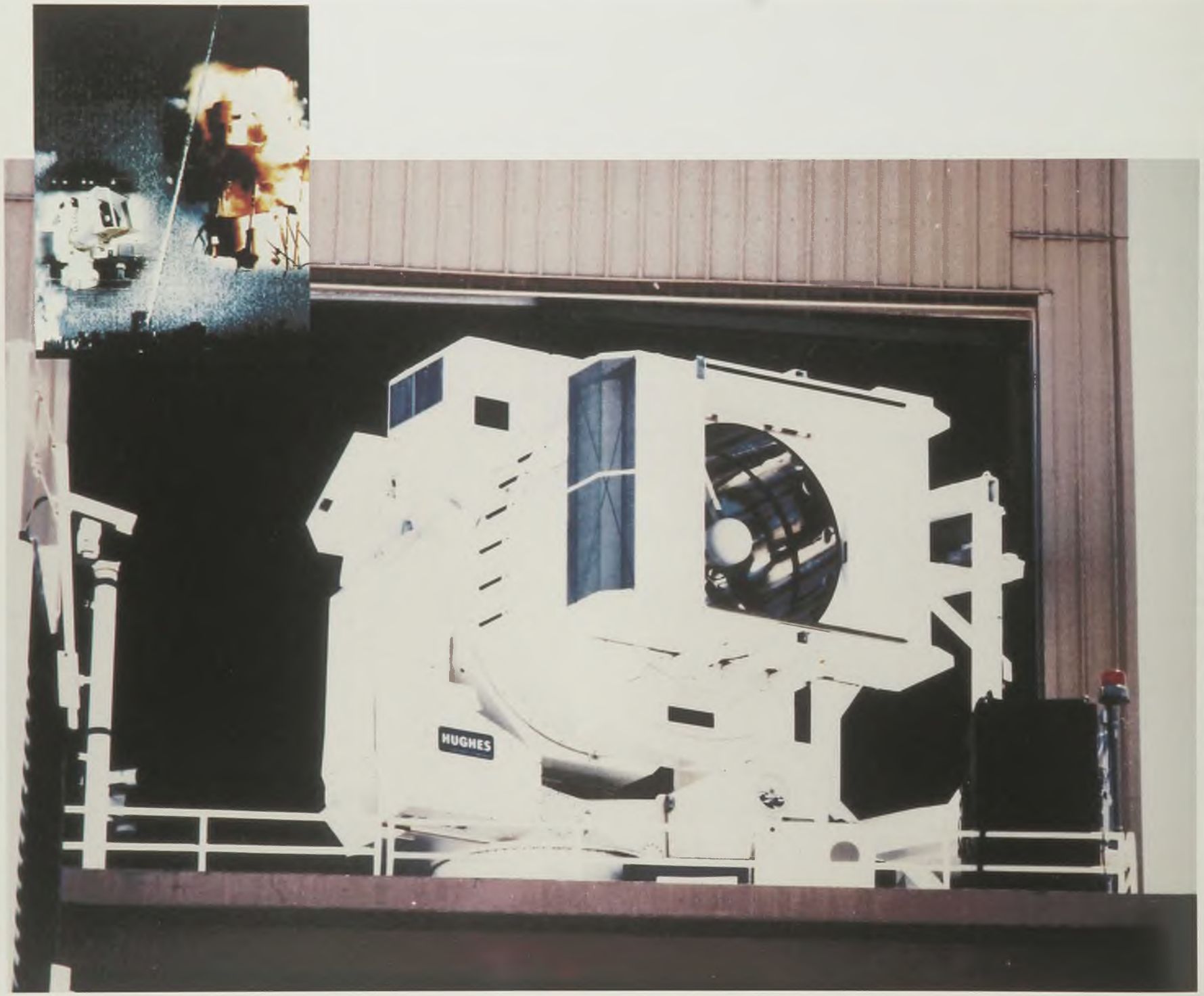
PROGRAM STATUS
FY97 Type-classified standard.
4QFY97 First unit equipped.
FY94–99 Procured 102 vehicles.

PROJECTED ACTIVITIES
Field to 1st Cavalry Division, 4th Infantry Division, and U.S. Army Training and Doctrine Command.

PRIME CONTRACTORS
United Defense, L.P. (York, PA)

* See appendix for list of subcontractors

High Energy Laser System Test Facility (HELSTF)



UNITED STATES ARMY

MISSION
Provide test capabilities for directed energy systems in a highly instrumented, controlled-access environment.

DESCRIPTION AND SPECIFICATIONS
The High Energy Laser System Test Facility (HELSTF), a component of the Army Major Range and Test Facility Base, tests high-energy lasers, associated pointer-trackers, beam directors and other components for the purpose of demonstrating, developing, and evaluating laser weapon system capabilities. The facility supports a variety of test functions including live fire, lethality, vulnerability, and materiel testing for effects, physical property response, and validation of hardening processes, as well as weaponization efforts for high-energy lasers, such as the Army's Tactical High Energy Laser (THEL) and, to a lesser extent, the Air Force's Airborne Laser program. HELSTF houses several lasers, ranging in spectrum from the visible (low power) to 10.6 microns, and in power from a few watts to the megawatt class Mid Infrared Advanced Chemical Laser (MIRACL). HELSTF maintains associated beam-control optics for shaping and forming beams from the high-powered lasers and a beam director with an array of sensors that can be used for pointing and tracking or to record/assess actions by the beam on various targets.

Lasers
MIRACL: Megawatt class, chemical/DF (HF with upgrade)
Laser Demonstration Device (LDD): Several kilowatts chemical/HF/DF
Low Power Chemical Laser (LPCL): 100 watt chemical laser HF/DF
Pulsed Laser Vulnerability Test System (PLVTS): Pulsed high power (kilojoule per pulse at 10 Hz) CO2
Beam Director: Sea Lite Beam Director (SLBD) 1.5 meter primary with visible, high-resolution TV, IR, MWIR, SWIR sensors

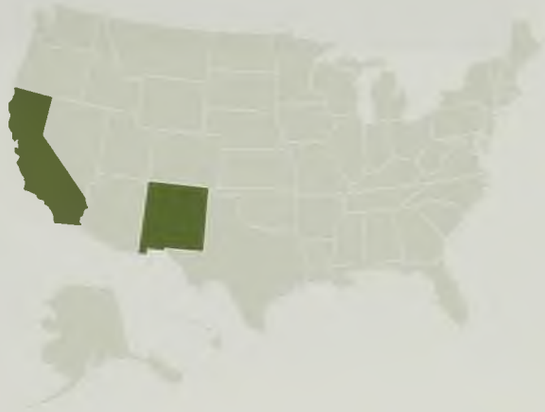
FOREIGN COUNTERPART
Former Soviet Union

FOREIGN MILITARY SALES
None

PROGRAM STATUS
HELSTF performs lethality testing through the Nautilus program; conducts extensive material testing for lethality, vulnerability and physical effects; and recently, provided important measurements for the data collection experiment (DCE). A representative test list includes: system test and evaluation for THEL; live-fire for Nautilus; damage and vulnerability for DCE; effects testing; lethality testing; space vehicle tests; and commercial plasma tests. A more extensive data collection effort is anticipated if the SLBD is modestly ($250K) upgraded. Currently, HELSTF is renovating the LDD laser for use in lower-power experiments and eventual integration with SLBD beam paths. HELSTF has demonstrated weapons capabilities in the past by destroying a variety of missiles and unmanned aerial vehicles.

PROJECTED ACTIVITIES
- Continue THEL testing
- Continue Nautilus testing
- Continue LDD renovation and testing
- Conduct additional data collection experiments (pending upgrades)
- Add a COIL laser and a solid state laser

PRIME CONTRACTORS
Logicon (San Pedro CA); Raytheon (Las Cruces, NM); Mevatec (Las Cruces, NM); TRESCO (Las Cruces, NM)



* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

High Mobility Artillery Rocket System (HIMARS)

UNITED STATES ARMY

High Mobility Artillery Rocket System (HIMARS)

Overmatch Capabilities

MISSION

Provides light, airborne, and air assault divisions and early-entry/forces with Multiple Launch Rocket System (MLRS) fire-power capability to conduct counterfire, suppression of enemy air defenses, and precision indirect fires to destroy material and personnel targets.

DESCRIPTION AND SPECIFICATIONS

The High Mobility Artillery Rocket System (HIMARS) supports the Army Vision by providing a rapidly deployable, lethal fire-support system for early entry forces. HIMARS is mounted on a family of medium tactical vehicles (FMTV) five-ton truck and can be transported by the C-130 aircraft. The lightweight chassis allows for faster road movement, lower operating costs, and requires 30 percent fewer strategic airlifts (via C-5 or C-17) to transport a battery than the current tracked M270 MLRS launcher unit. The HIMARS can fire the suite of MLRS family of munitions, including all Army tactical missile system variants. The HIMARS carries either a rocket or a missile pod, has a self-loading capability, and is manned by a three-man crew.

FOREIGN COUNTERPART

There are several foreign wheeled multiple rocket launch systems on the international market; none, however, have the mobility and munitions suite capabilities of HIMARS.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

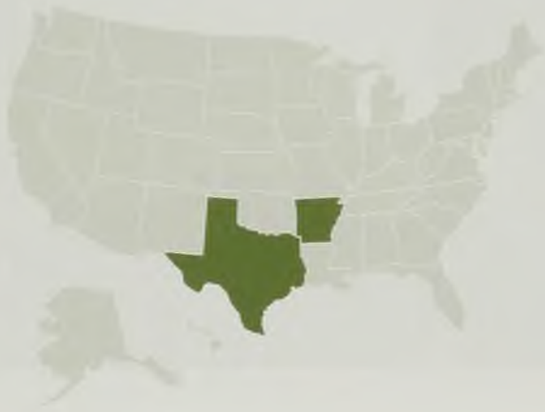
In FY00, Congress provided additional funding to accelerate HIMARS development. Additional procurement funding is programmed in FY03 and FY04 to accelerate HIMARS procurement in order to field two HIMARS Battalions in FY05. Four HIMARS prototypes have been built as part of the Rapid Force Projection Initiative (RFPI) Advanced Concept Technology Demonstration (ACTD). Three of the prototype HIMARS remain with the XVIII Airborne Corps for training and further evaluation during the RFPI ACTD's two-year extended user evaluation and also provide the unit a limited "go-to-war" capability. The HIMARS prototypes have received both a live-fire safety release and C-130 air certification. Lessons learned in the RFPI ACTD's field experiment and early user experiment will be used in the HIMARS engineering and manufacturing development (EMD) program. RFPI extended user evaluation began FY99 and is ongoing. HIMARS EMD phase began 1QFY00.

PROJECTED ACTIVITIES

FY01–05 Conduct developmental testing/operational testing.
1QFY03 Low-rate initial production decision.
2QFY06 Battalion-level first unit equipped.

PRIME CONTRACTORS

Lockheed Martin (Dallas, TX; Camden, AR)



* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

Hornet

52-0576N

MISSION
Counter enemy's mobility; delay, disrupt, and canalize enemy vehicle movement in the close battle; provide survivability for small isolated forces to minimize casualties and protect against armored vehicle attacks.

DESCRIPTION AND SPECIFICATIONS
Hornet is the Army's first generation of a smart, autonomous, top-attack munition. It employs seismic and acoustic sensors to detect, classify, and track a target. Once the target is validated by internal control electronics and is within the 100-meter lethal radius, the munition determines the optimum firing point and launches a smart submunition over the target. The sublet acquires the target by infrared sensor and fires a tantalum explosively formed penetrator at the top of the target vehicle. Hornet is planned for immediate use today with early entry forces such as the 82nd Airborne Division.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY00 First units of Basic Wide Area Munition (WAM) delivered.

PROJECTED ACTIVITIES
1QFY01 Award of low rate initial production run of product improved WAM.

PRIME CONTRACTORS
Textron (Wilmington, MA)

* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

HYDRA 70 Rocket System

MISSION
Perform a variety of functions: the war reserve unitary and cargo warheads are used for anti-materiel, anti-personnel, and suppression missions; the family of rockets also includes smoke screening, illumination, and training warheads.

DESCRIPTION AND SPECIFICATIONS
The family of HYDRA 70 rockets is fired from Apache, Cobra, and Kiowa Warrior helicopters by the Army and are used from other platforms by Special Operations forces, the Marine Corps, the Navy, and the Air Force. The warheads fall into three categories:
- Unitary warheads with impact-detonating fuses or remote-set multi-option fuzes
- Cargo warheads with airburst-range, setable fuses using the "wall-in-space" concept or fixed-standoff fuses
- Training rounds

FOREIGN COUNTERPART
Similar rockets are made by France and Canada.

FOREIGN MILITARY SALES
Bahrain, Colombia, Egypt, Greece, Japan, Jordan, Korea, Kuwait, The Netherlands, Pakistan, Saudi Arabia, Taiwan, Thailand, Tunisia, and United Arab Emirates.

PROGRAM STATUS
June 18, 1999 Multiple-year contract (basic year with four option years) was awarded to General Dynamics Ordnance Systems.
1QFY00 Delivery of FY99 signature practice rockets began. The contract for these training rockets was awarded early, in order to alleviate the shortfall in the pipeline.
Current General Dynamics is delivering rockets on two contracts.

PROJECTED ACTIVITIES
Current Continue production.

PRIME CONTRACTORS
General Dynamics (Burlington, VT)

* See appendix for list of subcontractors

Conduct Decisive Operations

Integrated Family of Test Equipment (IFTE)

MISSION
Isolate electronic faults in weapon systems.

DESCRIPTION AND SPECIFICATIONS
The Integrated Family of Test Equipment (IFTE) are four interrelated modular test, measurement, and diagnostic equipment systems that provide general purpose, standard automatic test equipment (ATE) capability through all levels of maintenance. IFTE allows the isolation of weapon systems faults to the line replaceable unit (LRU) at the organizational and direct support (DS) levels of maintenance, both on- and off-system, supporting rapid return to the battlefield. At general support (GS) and depot levels of maintenance, IFTE further diagnoses an LRU to the shop-replaceable unit. Two tactical systems provide on- and off-system support, respectively:

- **On-system tester:** The AN/PSM-80 Contact Test Set (CTS) or the AN/PSM-95 Soldiers Portable On-system Repair Tool (SPORT); and
- **Off-system tester:** The AN/TSM-191 Base Shop Test Facility (BSTF).

The CTS/SPORT is also the host for electronic technical manuals (ETMs) and interactive ETMs. The CTS/SPORT is man-portable and augments built-in-test/built-in-test-equipment to isolate weapon systems failures to the bad LRU. The BSTF consists of the AN/USM-632 Base Shop Test Station, housed in an S-280 shelter mounted on a five-ton truck. A second shelter and truck stores test program sets (TPSs). TPSs are the weapon systems-specific software that the ATE uses to diagnose faults in major items or components. A 60 kW generator powers the BSTF. Base shops serve at both DS and GS levels.

The commercial equivalent equipment is a non-tactical, non-ruggedized equivalent of the BSTF, designed for TPS development and to support requirements at depots, contractor facilities, and special repair activities. The electro-optic test facility (EOTF) is under development to provide an off-system electro-optic test capability at the DS and GS levels. The EOTF will be housed in an S-280 shelter, mounted on a five-ton truck, and will be powered by a 60 kW generator. The electronic repair shelter (ERS) is utilized for on-site circuit card repair.

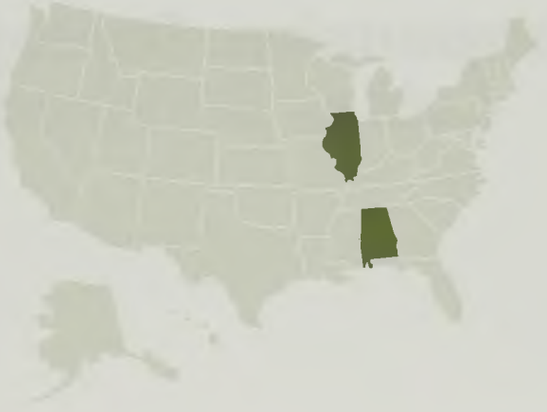
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
Argentina, Denmark, Egypt, Greece, Israel, Korea, Kuwait, NATO Maintenance and Supply Agency, Norway, Organization of African Unity, Saudi Arabia, Taiwan, and Thailand.

PROGRAM STATUS
BSTF, SPORT and ERS are in production; EOTF development continues.

PROJECTED ACTIVITIES
- Continue BSTF, SPORT and ERS fieldings.
- Initiate EOTF production.

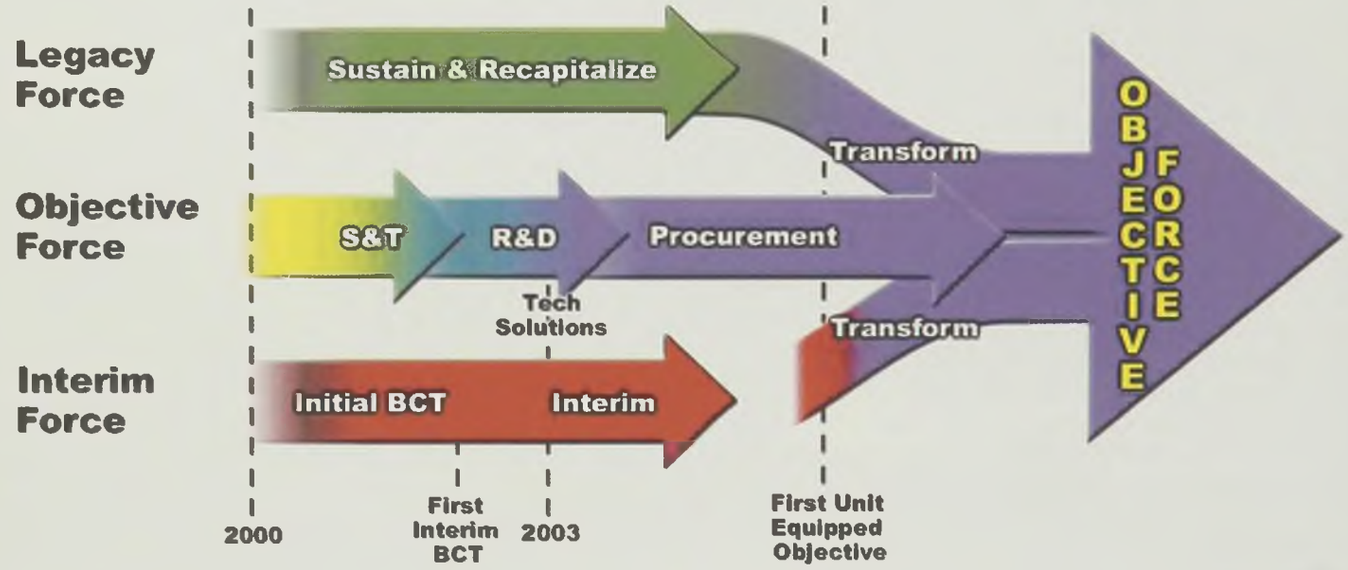
PRIME CONTRACTORS
BSTF/CEE/EOTF: Northrop Grumman (Rolling Meadows, IL)
SPORT: Miltope (Hope Hull, AL)
ERS: Tec-Masters (Huntsville, AL)



* See appendix for list of subcontractors

Sustain the Force

The Army Transformation



. . . Responsive, Deployable, Agile, Versatile, Lethal, Survivable, Sustainable.

MISSION
Ensure the effectiveness of the Brigade Combat Team (BCT), such that the BCT can be capable of deployment anywhere on the globe in a combat-ready configuration within 96 hours of liftoff.

DESCRIPTION AND SPECIFICATIONS.
The Interim Armored Vehicle (IAV) is designed to play a key role in the Brigade Combat Team (BCT). The BCT is a full-spectrum, combat force whose effectiveness was confirmed in all operational environments and against all current and projected threats. The BCT is designed and optimized primarily for employment in small-scale contingency (SSC) operations in complex and urban terrain against low-end and mid-range threats that may employ both conventional and asymmetric capabilities.

The BCT is capable of conducting all major doctrinal operations including offensive, defensive, stability, and support operations. Its core operational capabilities derive from excellent operational and tactical mobility, enhanced situational understanding, combined arms integration down to company level, and high dismount strengths for close combat in urban and complex terrain. Properly integrated through a mobile robust Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) network, these core capabilities compensate for platform limitations that may exist in the close fight, leading to enhanced force effectiveness. When employed in the operational environment for which it is optimized, the BCT has the capability to achieve success as a result of its early entry, shaping, and decisive actions.

A family of IAVs will be the primary weapon system for the Interim Brigade Combat Team. The IAV system will be capable of infantry, reconnaissance, direct and indirect fires, command and control, engineering, medical, and other combat and combat-support missions. The IAVs will be transportable by C-130 aircraft, interoperable in joint operations and will be able to operate and rapidly maneuver 24 hours a day.

The goal is to take advantage of Non-Developmental Item (NDI) systems with common subsystems and components to quickly acquire and field these systems. Where appropriate, the IAVs will integrate existing Government Furnished Material (GFM) subsystems, such as the TOW, Long Range Advanced Scout Surveillance System (LRAS3), and Forward Looking Infrared (FLIR). Innovative applications and technology insertion, such as Preplanned Product Improvements (P3I), will enable full operational capabilities for the IAV, while the Army pursues science and technology for the Future Combat System (FCS)—the family of systems required for the Objective Force.

FOREIGN COUNTERPART
N/A

FOREIGN MILITARY SALES
N/A

PROGRAM STATUS
To be determined

PROJECTED ACTIVITIES
FY00 Competitive solicitation and source selection
FY01 Milestone I/II low-rate initial production

PRIME CONTRACTORS
To be determined


Project the Force


Conduct Decisive Operations

Javelin

UNITED STATES ARMY

MISSION
Provide a medium anti-tank capability to the infantry, scouts, and combat engineers.

DESCRIPTION AND SPECIFICATIONS
The Javelin is a man-portable, anti-tank system developed for the U.S. Army and U.S. Marine Corps. It is replacing the Dragon. The system is highly lethal against tanks with both conventional and reactive armor. The Javelin comprises two major components: a reusable command launch unit (CLU) and a missile sealed in a disposable launch tube assembly. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather and countermeasure environments. The CLU also may be used in stand-alone mode for battlefield surveillance and target detection. Javelin's very small logistics tail provides the ability to rapidly deploy forces capable of carrying out anti-tank missions.

The Javelin system weighs 49.5 lb. and will have a maximum range in excess of 2500m. The key feature of the Javelin is the use of fire-and-forget technology that allows the gunner to fire and immediately take cover. Additional special features include the top attack or direct fire mode (for targets under cover), integrated day/night sight, advanced tandem warhead, imaging infrared seeker, target lock-on before launch, and soft launch, (The Javelin can be fired safely from enclosures and covered fighting positions).

The Javelin Training System consists of three training devices, each fulfilling a specific role: the missile simulation round (MSR) is used to familiarize the gunner with the physical characteristics of the Javelin; the basic skills trainer (BST), is used to develop the basic tactical and technical gunnery skills required to operate the Javelin; and the field tactical trainer (FTT), is used to refine the gunner's ability and enable the gunner to participate in both range training and force-on-force exercises.

Since June 1996, the Javelin has been successfully deployed to the U.S. Army Ranger Battalions at Ft. Lewis, WA; Hunter Army Airfield, GA; Ft. Benning, GA and the 82nd Airborne Division Ft. Bragg, NC. The fielding of the Javelin is the culmination of a successful engineering and manufacturing development program, which used extensive product verification and user tests to validate system performance and reliability.

FOREIGN COUNTERPART
The Israeli Spike and Gill are being promoted as having fire-and-forget capability. Other medium range systems currently fielding or in development include the Russian AT-7, the Swedish Bofors Bill, the French MILAN 2T, and the Euro Missile TRIGAT.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY97 Award three-year, multi-year contract for full-rate production (FRP).
Current Continue fielding.

PROJECTED ACTIVITIES
FY00 Award second multiyear FRP contract. Complete fielding to the 2nd Infantry Division. Begin fielding to the 10th Mountain Division.

PRIME CONTRACTORS
A joint venture between Raytheon (Tucson, AZ) and Lockheed Martin (Orlando, FL)

* See appendix for list of subcontractors


Project the Force


Protect the Force


Gain Information Dominance


Shape the Battlespace


Conduct Decisive Operations


Sustain the Force

Joint Service Lightweight Integrated Suit Technology (JSLIST)

MISSION
Provide a joint service chemical/biological (CB) protective clothing ensemble that can be tailored to the diverse operational needs of the individual soldier, marine, airman, and sailor and is compatible with existing and emerging individual protective equipment.

DESCRIPTION AND SPECIFICATIONS
The Joint Service Lightweight Integrated Suit Technology (JSLIST) system will consist of three components: lightweight CB protective garments, multi-purpose overboots, and gloves. Each component is based on state-of-the-art material technologies that have undergone extensive user evaluation and field and laboratory testing. This system provides the highest level of protection against current CB threats, while reducing heat strain, weight, and bulk to an absolute minimum. Balancing CB protection and heat-strain management with service-defined mission requirements optimizes user performance.

The main thrust of the JSLIST is to develop the next-generation CB protective system. Considerable focus also continues, however, on ensuring full compatibility and integration with equipment such as developmental masks and body armor, and developmental systems such as Land Warrior, Air Warrior, and Mounted Warrior. Under management of the four service program managers, JSLIST has joint participation in every aspect of the program, including management, system planning, system and component design, material selection, test execution, and data assessment. The program structure and approval processes have been configured to assure full user participation and to meet common and service-unique requirements.

FOREIGN COUNTERPART
Many countries have similar products.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY97 Milestone III decision.
4QFY97 Commenced production.

PROJECTED ACTIVITIES
The JSLIST preplanned product improvement program is an iterative process that will allow for periodic technology insertion of tested, approved materials into the JSLIST production cycle, the pursuit of Special Operations Command requirements, and production of improved gloves.

PRIME CONTRACTORS
NCED (El Paso, TX); Trade Winds (Gary, IN); Group Home Foundation (Belfast, ME); Creative Apparel (Belfast, ME); Battelle (Stafford, VA)

* See appendix for list of subcontractors

Protect the Force

Land Warrior (LW)

UNITED STATES ARMY

Land Warrior (LW)

Overmatch Capabilities

MISSION
Provide significant improvement in soldier lethality, survivability, battle command, mobility, sustainment, and training/mission rehearsal.

DESCRIPTION AND SPECIFICATIONS
The Land Warrior (LW) is a first-generation, modular, integrated fighting system for dismounted combat soldiers that incorporates an assortment of systems, components, and technologies into a lethal, survivable soldier system. LW systems/components include: a modular weapon system with thermal weapon sight (TWS), laser rangefinder, digital compass, daylight video sight, and close combat optic; an integrated headgear with helmet mounted display, TWS sight picture, and image intensifier; enhancements to protective clothing and individual equipment; and an integrated individual soldier computer/radio. LW science and technology advanced components include integrated sight, combat ID, enhanced radio, and voice recognition. The system's approach will optimize and integrate these capabilities, without adding to the soldier's combat load.

The integrated squad and soldier radios and the Global Positioning System (GPS) within the computer/radio subsystem (CRS) provide digital command and control and situational awareness capability previously unavailable to the combat soldier. The GPS provides the soldier's location to the computer, integrates the soldier's position with location reports from other soldiers, and displays the information on a digital map on his helmet-mounted display. The radios of the CRS, controlled by the computer, provide both digital and voice capabilities to the dismounted soldier. The soldier radio is provided to all Land Warriors; the leader radio is provided to team leaders and above. The leader radio is Single Channel Ground and Airborne Radio System (SINCGARS)-compatible while the soldier radio is not. LW is designed to be fully compatible on the digitized battlefield.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
4QFY95 Awarded engineering and manufacturing development (EMD) contract.
1QFY97 Conducted early operational experiment at Ft. Benning, GA.
2QFY97 Held preliminary design review.
4QFY97 Conducted critical design review.
Current Commenced EMD.

PROJECTED ACTIVITIES
FY00 Fabricate 65 systems to support the Joint Contingency Force (JCF) Advanced Warfighting Experiment (AWE) and developmental testing.

Conduct fightability spiral analysis and begin developmental testing.
FY02 Conduct platoon-limited user test.
FY04 Low-rate initial production decision and initiation of operational testing.
FY06 Full production decision for 34,000 systems.
FY07 First unit equipped.
FY10 Achieve initial operational capability.

PRIME CONTRACTORS
Raytheon (El Segundo, CA); Exponent (Menlo Park, CA)

* See appendix for list of subcontractors

Protect the Force

Gain Information Dominance

Conduct Decisive Operations

Lightweight Laser Designator Rangefinder (LLDR)

UNITED STATES ARMY

MISSION
Provide artillery light forces and U.S. Marine Corps (USMC) forward observers with the capability to detect, recognize, locate, and designate targets and digital self/target data to fire control centers.

DESCRIPTION AND SPECIFICATIONS
The Lightweight Laser Designator Rangefinder (LLDR) is a man-portable, modular target location and designation system whose major components are the target locator module (TLM), laser designator module (LDM), battery, and tripod. LLDR supports direct, indirect, and laser-guided munitions.

The TLM contains a charge coupled device (CCD) camera, thermal imager, eyesafe laser rangefinder, digital magnetic compass, Global Positioning System (GPS), and digital export capability. The Department of Defense/North Atlantic Treaty Organization-compatible LDM can designate targets up to five kilometers. The LLDR weighs less than thirty-five lbs and can be easily transported by a two-person team. Since it is modular, the target location capability can be operated without the LDM. The TLM performs boresight verification by "see-spot" technology.

FOREIGN COUNTERPART
Although several countries have man-portable target location and/or target designation systems, there is no existing system providing all of the capabilities of the LLDR within a 35 lb package.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
A thirty-month engineering and manufacturing development phase was initiated in 4QFY97. The Army and USMC have agreed to a joint development program. LLDR is a Warfighter Rapid Acquisition Program and has received funding for early fielding of an initial operational capability. The critical design review was held 3QFY98. System integration difficulties and test window availability have extended the development effort by a year.

PROJECTED ACTIVITIES
2/3QFY00 Conduct development testing.

PRIME CONTRACTORS
Litton (Apopka, FL)

* See appendix for list of subcontractors

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Long Range Advanced Scout Surveillance System (LRAS3)

UNITED STATES ARMY

MISSION
Provide the U.S. Army armor and infantry scout platoons with a long-range reconnaissance and surveillance sensor system that significantly enhances their capability over the currently fielded AN/TAS-6, Night Observation Device, Long Range (NODLR).

DESCRIPTION AND SPECIFICATIONS
The Long Range Advanced Scout Surveillance System (LRAS3) will consist of a Second Generation Forward Looking Infrared (FLIR) with long-range optics, an eyesafe laser rangefinder, a day video camera, and a Global Positioning System (GPS) with attitude determination. The LRAS3 will permit scouts to detect targets at ranges in excess of three times beyond the NODLR system's capabilities. This additional standoff capability will allow scouts to operate well outside the range of currently fielded threat direct fire and sensor systems. The LRAS3's line-of-sight multi-sensor suite provides real-time target detection, recognition, and identification capability to the scout with 24-hour and adverse-weather operation. The LRAS3 also determines far-target location coordinates for any target ranged to by the scout. The LRAS3 will operate in both mounted and dismounted configurations. The LRAS3 design will include a digital port for future exportation of targeting information.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
4QFY98–2QFY99 Conduct production qualification testing.
1QFY99 Conduct development test.
3QFY99 Initial operational test and evaluation.
2QFY00 Completed milestone III decision brief.
2QFY00 Awarded production contract.

PROJECTED ACTIVITIES
3QFY01 First unit equipped.

PRIME CONTRACTORS
Raytheon (McKinney, TX); DRS Technologies (Torrance, CA)

* See appendix for list of subcontractors


Protect the Force


Gain Information Dominance


Shape the Battlespace


Conduct Decisive Operations

Longbow HELLFIRE

UNITED STATES ARMY

MISSION
Provide an adverse weather, fire-and-forget, heavy anti-armor capability for the Army's AH-64D Longbow Apache attack helicopter.

DESCRIPTION AND SPECIFICATIONS
The Longbow HELLFIRE missile is a fire-and-forget version of the HELLFIRE missile which uses inertial guidance. It is part of the AH-64D Longbow Apache attack helicopter (AH-64D) system that includes a mast-mounted fire control radar (FCR) and launcher. The Longbow FCR will locate, classify, and prioritize targets for the Longbow HELLFIRE missile. The Longbow HELLFIRE missile incorporates a millimeter-wave radar seeker on a HELLFIRE II missile aft-section bus.

The primary advantages of the Longbow missile include the following:

- Adverse weather capability (rain, snow, fog, smoke, and battlefield obscurants)
- Millimeter-wave countermeasures survivability
- Fire-and-forget guidance, which allows the Apache to launch and then immediately remask, thus minimizing exposure to enemy fire
- An advanced warhead capable of defeating all projected armor threats into the 21st century
- Reprogrammability to adapt to changing threats and mission requirements

The combination of Longbow HELLFIRE's fire-and-forget capability and HELLFIRE II's precision guidance will provide the battlefield commander with flexibility across a wide range of mission scenarios. This permits fast battlefield response and high mobility not afforded by other anti-armor weapons.

Diameter: 7 in
Weight: 108 lb
Length: 68 in

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
Singapore (foreign military sale); United Kingdom (direct commercial sale).

PROGRAM STATUS
1QFY99 Received authorization for FY99–03 multiyear contract.
April 30, 1999 Awarded contract.
4QFY99 Delivered 568 of 1,056 low-rate initial production (LRIP) II missiles, for a total of 920 Longbow Hellfire missiles in the tactical inventory.

PROJECTED ACTIVITIES
- Continue fielding.
- Complete LRIP II.
- Complete lock-on-before-launch inhibit test.
- Begin full-rate production.

PRIME CONTRACTORS
Lockheed Martin (Orlando, FL; Nashua, NH);
Northrop Grumman (Huntsville, AL; Bethesda, MD);
Stellex (Palo Alto, CA)

* See appendix for list of subcontractors

Conduct Decisive Operations

Mortar Fire Control System

Communications
Digital & Voice
SINCGARS
SIP, EPLRS

Navigation & Pointing Device
Tube Mounted (INS)
Inertial
Navigation
System

PLGR
Location/
Navigation Aid

Driver's Display
Provides direction of fire for orienting gun

Gunner's Display
Replaces Optical Sight
Digitally Linked to Pointing Device & CI
Improved Gun Laying Procedure

Commander's Interface (CI)
Automatic Ballistic Computations
Digital Interface with Tactical Internet for Situational Awareness & AFATDS

MISSION
Provide organic indirect fire support capability to the maneuver unit commander.

DESCRIPTION AND SPECIFICATIONS
The 120 mm mortar system is a conventional smoothbore, muzzle-loaded mortar system that provides increased range, lethality, and safety compared to the World War II-vintage 4.2-inch heavy mortar system it replaced in mechanized infantry, motorized, armored, and cavalry units. It is employed in both towed and carrier versions and fires a family of enhanced ammunition produced in the United States. The Mortar Fire Control System (MFCS) will provide mortar users with Paladin-like fire control capability that greatly improves mortar lethality, responsiveness and crew survivability. The M303 sub-caliber tube insert allows mortar crews to perform live-fire training with stockpiled 81mm ammunition.

Range: 7,240 m
Rate of fire: 16 rnds/min, first minute; 4 rnds/min sustained
Weight: 319 lb
Crew: 4 carrier mounted (M1064); 5 ground mounted (M120)
Ammunition: High explosive, smoke, illumination (visible light and infrared), full-range practice

FOREIGN COUNTERPART
Denmark, Finland, France, Germany, Great Britain,Israel, Russia.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
FY99 Fielding of the M121 mortar in the M1064 mounted carrier was completed. A brigade of the 10th Mountain Division was equipped with M120-towed 120 mm mortars to demonstrate the "arms room concept."

- M734A1 multi-option fuze materiel released.
- M931 full-range practice round materiel released.
- The Precision Guided Mortar Munition (PGMM) is currently in the Advanced Technology Demonstration (ATD) phase.

PROJECTED ACTIVITIES
M30 Improved Mortar Ballistic Computer (IMBC)
FY00 Initial fielding scheduled; the IMBC will replace the M23 MBC.

XM983 Infrared (IR) and the XM930 Visible Light Illuminating cartridges
FY01 Fielding scheduled.

Mortar Fire Control System (MFCS)
2QFY01 Type classification scheduled.
3QFY02 First unit equipped scheduled.

M934A1 HE round
FY03 Production of this new insensitive munition cartridge is scheduled. A material change to develop and qualify an insensitive explosive for the M934A1 HE round has been approved.

Precision Guided Mortar Munition (PGMM)
FY02 Scheduled for program definition and risk reduction.
FY06 Type classification

PRIME CONTRACTORS
Pocal Industries (Scranton, PA); SNC (Le Gardeur, Quebec); KDI (Cincinnati, OH); Valentec Systems (Mt. Arlington, NJ); AlliedSignal (Teterboro, NJ); American Ordnance (Milan, TN); Chamberlain Manufacturing Corporation (Scranton, PA); Pine Bluff Arsenal (Pine Bluff, AR); Lockheed Martin (Orlando, FL)

* See appendix for list of subcontractors

Conduct Decisive Operations

Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW)

UNITED STATES ARMY

MISSION
Provide a one-man-portable, lightweight, shoulder-fired, fire-and-forget, multi-purpose munition capable of defeating enemy forces in buildings, reinforced structures, bunkers, and light-weight armored vehicles.

DESCRIPTION AND SPECIFICATIONS
The Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW) munition consists of a disposable launcher/carry case equipped with a 2.5X telescopic sight compatible with current and future night vision devices. The shoulder-launched missile consists of a two-stage, soft-launch propulsion system with inertial guidance and explosively formed penetrator with follow-through grenade warhead. The missile is capable of being fired quickly from its carrying configuration and is safely fired from enclosures.

Weight: 20 lb
Range: 500M (target-dependent)
Crew: 1
Lethality: Capable of incapacitating personnel in bunkers and reinforced concrete/brick buildings and defeating modern light armor.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
2QFY98 Completed phase I (risk reduction phase) successfully, veriying accuracy with two successful full missile shots at 500m wall and 200m bunker.
3QFY98 Executed phase II (system qualification).
4QFY98 Commenced U.S. Marine Corps Predator qualification testing.
1QFY99 Began early user demonstration and system confidence testing.
2QFY99 Conducted preliminary design review.
Current Conduct pre-production proveout.

PROJECTED ACTIVITIES
3QFY00 Undertake critical design review.
Begin pre-production qualification testing.

PRIME CONTRACTORS
Lockheed Martin (Orlando, FL)

* See appendix for list of subcontractors

Multiple Launch Rocket System (MLRS)

UNITED STATES ARMY

MISSION
Provide counterbattery fire and suppression of enemy air defenses, light materiel, and personnel targets.

DESCRIPTION AND SPECIFICATIONS
The Multiple Launch Rocket System (MLRS) is an artillery weapon system that supplements cannon artillery fires by delivering large volumes of firepower in a short time against critical, time-sensitive targets. The basic warhead carries improved conventional submunitions. The MLRS, however, is capable of supporting and delivering all of the MLRS family of munitions, including the Army tactical missile system weapon. Growth programs are underway to extend the range of the rocket system and to upgrade the fire control and launcher mechanical systems. The M270A1 upgrade consists of the Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) modifications. The IFCS will mitigate electronic obsolescence and will provide growth for future weapon systems. The ILMS will provide rapid response to time-sensitive targets by reducing the aiming time by seventy percent and reducing the reload time by fifty percent. The Extended Range MLRS (ER-MLRS) Rocket will extend the current range of the basic rocket from 32 kilometers to a new range of approximately 45 kilometers.

Length: 6,832 mm
Width: 2,972 mm
Weight: 24,756 kg
Range: 483 km
Average speed: 40 kph
Max speed: 56 kph
Crew: 3

FOREIGN COUNTERPART
ABABEL (262mm, 400mm), AVIBRAS/TECTRAN (127mm, 180mm, 300mm), ORKAN M87 (262mm), LAR-60 (160mm), MAR-350 (300mm), SAKR-80 (325mm), BM-22 (220mm), 9A52 (300mm), M-1985 (240mm), M-1978 (170mm), M-1991 (240mm), WM-80 (273mm), WS-1 (320mm), RAYO (160mm).

FOREIGN MILITARY SALES
Bahrain, Denmark, France, Germany, Greece, Israel, Italy, Japan, Korea, The Netherlands, Norway, Turkey, and the United Kingdom.

PROGRAM STATUS
1983 U.S. initial operational capability for MLRS achieved.
FY89 Starting this year, MLRS has been co-produced by the United States, Germany, France, Italy, and the United Kingdom. A total of 857 launchers have been procured for the United States.
3QFY98 Initial procurement of the planned system improvement—M270A1 upgrade—occurred.
4QFY99 M270A1 program was restructured to add additional capability and to mature software prior to initial operational test and evaluation.

PROJECTED ACTIVITIES
3QFY01 M270A1 initial operational test.
4QFY01 M270A1 milestone III, full-rate production decision. M270A1 first unit equipped.

PRIME CONTRACTORS
Lockheed Martin (Dallas, TX)

* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

Night Vision (NV) Image Intensification (I2)

Target Location & Observation System (TLOS)

Aviator's Night Vision Imaging System Heads-up Display (ANVIS/HUD)

AN/PVS-7D Night Vision Goggle

AN/PVS-10 Night Vision Sniper Night Sight

MISSION
Enable soldier to operate more effectively and safely in day or night and under degraded battlefield conditions.

DESCRIPTION AND SPECIFICATIONS
Night Vision (NV) Image Intensification (I2) systems include the following:

The **AN/AVS-6 Aviator's Night Vision Imaging System** (ANVIS) provides image intensification that enables helicopter crew members to conduct night missions under minimal ambient light conditions. It is powered by existing aircraft power, a helmet-mounted battery pack, or a clip-on power supply. The **AN/AVS-7 Aviator's Night Vision Imaging System Heads-Up Display** provides aviators with critical flight information superimposed on the visual image of the ANVIS. The system is electro-optical and provides both the pilot and copilot critical, real-time, high-resolution flight and navigational information. The **AN/PVS-7D Night Vision Goggle** is a lightweight, binocular goggle used by individual soldiers. It uses a single passive third-generation image intensifier tube. The goggle is used in combat, combat support, and combat service support operations. Ancillary equipment includes a helmet mount, protective eyecups, an objective lens cover, a compass, and a 3X magnifying lens. The **AN/PVS-14 Monocular Night Vision Device** will provide leaders of combat infantry units with a small, lightweight, night vision device for use in observation and command and control. It interfaces with the AN/PVS-7D head and helmet mount and the 3X magnifier. It can also be mounted to a small arms rail using a rail grabber. The **AN/PVS-10 Night Vision Sniper Night Sight** is an integrated day/night sight for the M24 sniper rifle. It enables the sniper to acquire and engage targets during low and high ambient light conditions. The system mounts on the M24 and uses the same mil-dot reticle as the existing Leopold day scope. The magnification for day and night operation is 8.5X, and the system's maximum weight is 4.9 lb. The **AN/TVS-5A** is a long-range night vision sight used with the MK-19 grenade launcher and the M2 machine gun. The sight provides a magnification of 5.8X, a field of view 9.2 degrees, and employs a mounting bracket that corrects for trajectory and/or windage, depending on the weapon. There is an upgrade program to replace the current 16mm tube with a 25 mm tube for a portion of the fielded systems. The **Lightweight Video Reconnaissance System** consists of a man-portable out station and a vehicle-mounted base station. The outstation is used by surveillance or reconnaissance teams to capture, compress, and transmit still-frame images over military radios to the base station located at a higher echelon. The **Target Location and Observation System** (TLOS) is a lightweight, self-contained, image-intensified day/night sight that employs a near-infrared low-energy laser to actively acquire direct view and electro-optic targets.

FOREIGN COUNTERPART
I2, laser, and thermal devices are produced in many countries.

FOREIGN MILITARY SALES
AN/AVS-6(V)1 and 2: Bahrain, Colombia, Greece, Jordan, Mexico, Saudi Arabia, Taiwan, Thailand, United Arab Emirates. **AN/PVS-7:** Italy, Kuwait, Mexico, Portugal, Saudi Arabia. Taiwan. **ANVIS/HUD:** Israel

PROGRAM STATUS
FY99 Completed HUD fielding.
1QFY99 LVRS first unit equipped at Ft. Bragg, NC.
2QFY99 Completed TLOS deliveries; first unit equipped.
3–4QFY99 Test new LVRS outstation.
Current Field AN/TVS-5A.

PROJECTED ACTIVITIES
3–4QFY00 Test new TVS-5A mounting bracket.

PRIME CONTRACTORS
ITT (Roanoke, VA); BAE Systems (Austin, TX); Litton Industries (Garland, TX; Tempe, AZ); Lockheed Martin (Orlando, FL; Nashua NH)

* See appendix for list of subcontractors

Objective Individual Combat Weapon (OICW)

UNITED STATES ARMY

Objective Individual Combat Weapon (OICW)
Overmatch Capabilities

MISSION
Provide the infantry soldier with a decisive overmatch capability by developing the next-generation weapon system which will dramatically increase his lethality, range and capability through the use of high explosive air-burst ammunition.

DESCRIPTION AND SPECIFICATIONS
The Objective Individual Combat Weapon (OICW) will replace selected M16 rifles, M4 carbines. The modular, dual-barrel OICW will combine the lethality of a 20 mm air-bursting munition, a 5.56 mm North Atlantic Treaty Organization (NATO) ammunition, and a full-solution fire control to affect decisively violent and suppressive target effects and provide a leap ahead in small arms performance. This fire control will incorporate a laser rangefinder, ballistic computer, direct view optics, video sight, electronic compass, thermal capability and a target tracker. The OICW's high explosive air bursting munition will be capable of defeating not only exposed targets, but those in defilade (targets that have taken cover behind structures, terrain features and/or vehicles), a capability which the current rifle and carbine do not have. The OICW will provide an overmatch in system effectiveness by doubling the infantryman's stand-off range to 1,000 meters, effective day/night operation, and significant improvements in lethality and target effects (probability of incapacitation and suppression), while increasing the versatility and survivability of the soldier. The OICW will be fully compatible with the digital battlefield and will provide the lethality upgrade for the Land Warrior.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
During 1999, the U.S. government joint service technical and user team and the contractor team led by Alliant Techsystems conducted the OICW Advanced Technology Demonstration (ATD). The demonstration, which consisted of both technical and user testing of three OICW ATD prototypes, culminated in a troop demonstration during August 1999. The OICW completed the remaining ATD testing in 1QFY00, proving the feasibility of the concept. The ATD has successfully completed its purpose: demonstrating the concept and highlighting areas of risk.

PROJECTED ACTIVITIES
FY00 Milestone I and transition to the Office of the Product Manager, Small Arms (OPMSA) for the program definition and risk reduction (PD&RR) phase.
FY00–02 PD&RR phase which will utilize simulation and modeling for acquisition, requirements and training (SMART) to produce and test a near-final design of the OICW for engineering and manufacturing development (EMD).
FY03–06 EMD.
FY07 First unit equipped.

PRIME CONTRACTORS
Alliant Techsystems (Hopkins, MN)

* See appendix for list of subcontractors

Protect the Force

Conduct Decisive Operations


"HIT-TO-KILL"

MISSION
Provide defense of critical assets and maneuver forces belonging to the corps and to echelons above corps against aircraft, cruise missiles, and tactical ballistic missiles (TBMs).

DESCRIPTION AND SPECIFICATIONS
The combat element of the PATRIOT missile system is the fire unit, which consists of a phased array radar set (RS), an engagement control station (ECS), an electric power plant (EPP), an antenna mast group (AMG), and eight remotely located launching stations (LS). The RS provides all tactical functions of airspace surveillance, target detection and tracking, and missile guidance and engagement support. The ECS provides the human interface for command control of operations. Each LS contains four ready-to-fire missiles sealed in canisters that serve dual purposes as shipping containers and launch tubes. PATRIOT's fast-reaction capability, high firepower, ability to track numerous targets simultaneously, and ability to operate in a severe electronic countermeasure environment are significant improvements over previous air defense systems.

The PATRIOT Advanced Capability-3 (PAC-3) upgrade program will incorporate significant upgrades to the RS and ECS, and will add the new PAC-3 missile which utilizes hit-to-kill technology for greater lethality against TBMs armed with weapons of mass destruction. Additionally, it will be possible to have up to 16 PAC-3 missiles per launcher, increasing firepower and missile defense capabilities. The primary mission of the PAC-3 missile is to kill maneuvering and non-maneuvering TBMs, and the system will also be able to counter advanced cruise missiles and aircraft. The PAC-3 upgrade program will comprise system improvements to increase performance against an evolving threat, meet user needs, and enhance joint interoperability.

FOREIGN COUNTERPART
Russia: a combination of the SA-10 and SA-12

FOREIGN MILITARY SALES
The Netherlands, Germany, Japan, Saudi Arabia, Israel, Kuwait, and Greece are currently participating in PATRIOT acquisition programs. Discussions are ongoing with several other interested allies for acquisition of the PATRIOT system.

PROGRAM STATUS
Fielding of the basic PATRIOT system to U.S. forces is complete. The system is deployed in Continental United States, Europe, Korea, and Southwest Asia. U.S. missile production deliveries include PATRIOT Anti-tactical Ballistic Missile Capability-2 (PAC-2) and guidance enhanced missile. The PAC-3 program is 75% complete with the RS, ECS, and LS improvements in production. The PAC-3 missile is in the test flight phase of engineering and manufacturing development. Having successfully conducted two intercepts of TBM targets, the PAC-3 system has entered low-rate initial production.

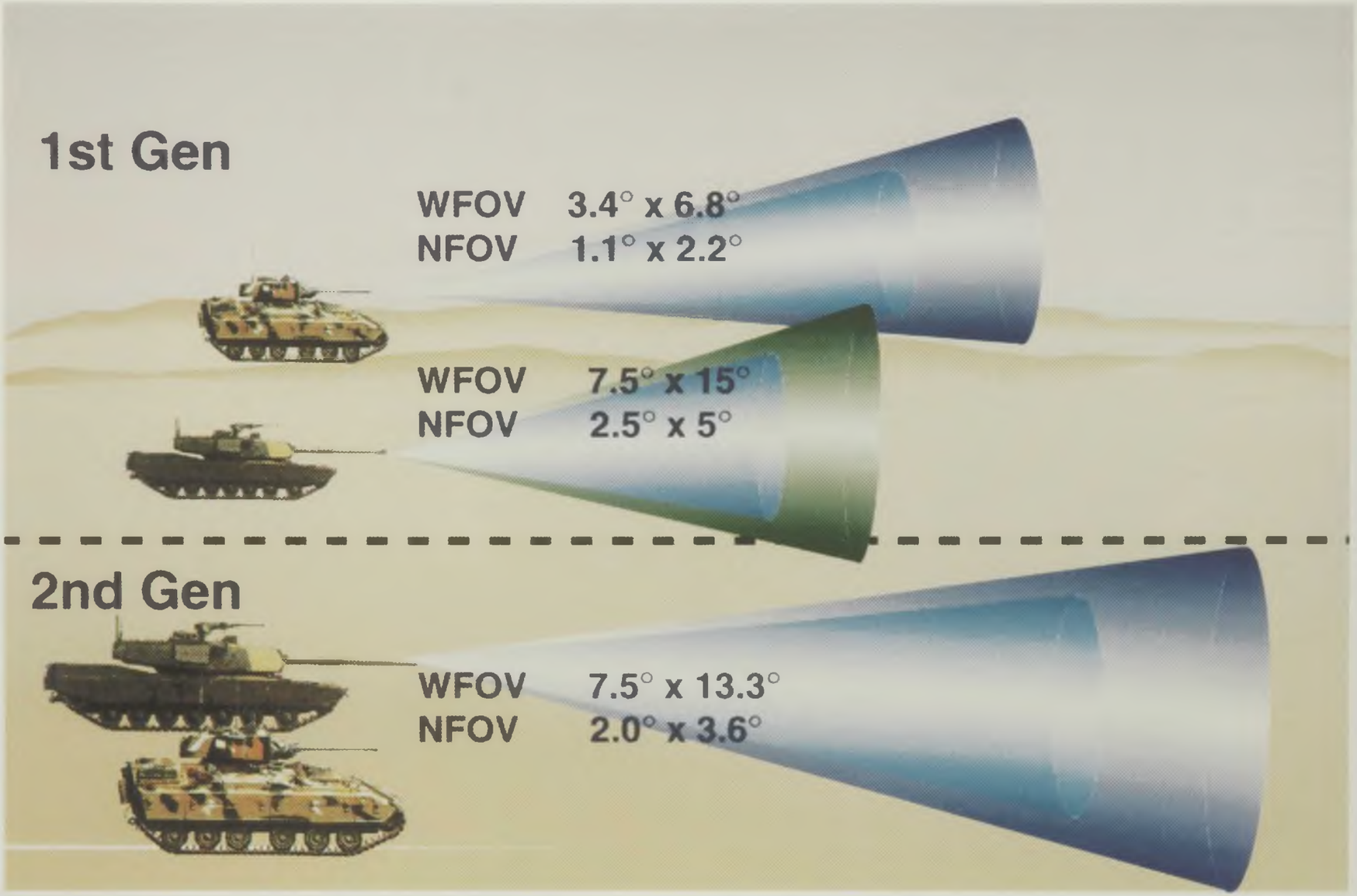
PROJECTED ACTIVITIES
Low-rate initial production is ongoing.

PRIME CONTRACTORS
Raytheon (Bedford, MA); Lockheed Martin (Grand Prairie, TX)

* See appendix for list of subcontractors

Protect the Force

Second Generation Forward Looking Infrared (FLIR)



MISSION

Provide the M1A2 Abrams Main Battle Tank, M2A3 Bradley Fighting Vehicle, and Long Range Advanced Scout Surveillance System with a leap-ahead target acquisition capability during all atmospheric and obscurant conditions, as well as ability to see the same battlespace.

DESCRIPTION AND SPECIFICATIONS

The Second Generation Forward Looking Infrared (FLIR) is the Army's first major horizontal technology integration (HTI) program. One of the Army's key objectives in its quest to "own the night" is the integration of Second Generation FLIR technology into a number of new and existing platforms. One goal of this program is to develop and produce a common FLIR to maximize economies of scale during production and to minimize life cycle costs.

By using a common thermal sensor known as a B-Kit which can be integrated into any candidate platform, the user community will be able to see the same battlespace and achieve a broad overmatch to potential adversary capabilities. The linkage between the B-Kit and the perspective sights will be system-specific platform links called A-Kits.

The program initially upgraded two candidate platforms selected by Army leadership: the M1A2 and M2A3. The current platform sight applications include: M1A2 Gunner's Primary Sight, M1A2 Commander's Independent Thermal Viewer, M2A3 Improved Bradley Acquisition system, M2A3 Commander's Independent Viewer, the Long Range Advanced Scout Surveillance System (LRAS3), and the Line-of-Sight Anti-Tank (LOSAT) System. The HTI concept can also benefit other Army programs, such as the Apache and future armored vehicles.

The present system concept will allow adaptation of this common sensor to any new platform application desired by Army leadership. In addition, this system will provide a battlespace observation edge for U.S. forces well into the next century. Commonality of FLIRs in multiple platforms facilitates development and fielding of future upgrades, such as image fusion, automatic target recognizers, and target trackers.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

1QFY97 Approved to begin low-rate initial production (LRIP).
3QFY97 Awarded LRIP contracts.
1QFY98 Conduct Bradley limited user test (LUT) I.
3QFY98 First LRIP deliveries.
1QFY99 Conduct Bradley LUT II.
First M2A3 deliveries.
1QFY00 Successfully completed HTI SGF milestone III.
2QFY00 Awarded HTI SGF full-rate production contract.

PROJECTED ACTIVITIES

4QFY00 Conduct M2A3 initial operational test and evaluation.
Conduct M1A2 SEP force development test and evaluation.

PRIME CONTRACTORS

Raytheon (McKinney, TX); DRS Technology, Inc. (El Segundo, CA; Palm Bay, FL)

* See appendix for list of subcontractors

Project the Force

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Selectable Lightweight Attack Munition (SLAM)

UNITED STATES ARMY

MISSION
Defeat vehicles and light armored targets.

DESCRIPTION AND SPECIFICATIONS
The Selectable Lightweight Attack Munition (SLAM) is an Army war reserve modernization munition. It is a lightweight (2.2 lb), hand-emplaced munition that offers the user multiple modes of operation. SLAM can engage and defeat targets up to 25 feet from detonation.

It can be used for bottom attack (magnetic signature), side/top attack (infrared signature), timed demolition, or by operator-initiated command detonation.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
First Army production quantity of SLAM funded in FY97.

PROJECTED ACTIVITIES
A production build readiness review will be conducted by the prime contractor on the explosive train, prior to production start-up, which is slated for mid-FY00.

PRIME CONTRACTORS
Alliant Techsystems (Minneapolis, MN)

* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

Sense and Destroy Armor (SADARM)

MISSION
Provide an autonomous, counterbattery capability to indirect fire units.

DESCRIPTION AND SPECIFICATIONS
Sense and Destroy Armor (SADARM) is a counterbattery fire-and-forget, multi-sensor-fuzed smart munition designed to detect and destroy counter-measured armored vehicles, primarily self-propelled artillery. Each 155 mm artillery projectile delivers two SADARM submunitions. Once dispensed from the projectile, the submunitions descend and search for a target by scanning the ground in a spiral pattern. The submunitions use active and passive millimeter wave radar and infrared sensors to detect a target. After detection, SADARM determines the optimum engagement point and fires a highly lethal, explosively formed penetrator through the top of the target. With the multimode sensor suite, the submunition is effective in all weather and terrain. SADARM is a gun-hardened submunition that can be dispensed from a variety of carriers.

Caliber: 5.8 in
Sub-munition weight: 26.2 lb
Range: 22.5 km (M109A6 howitzer), 26.0 km (Crusader)
Number of submunitions: 2 per projectile

FOREIGN COUNTERPART
Germany: SMArt 155 (DM 702)

FOREIGN MILITARY SALES
None

PROGRAM STATUS
1QFY98 Successfully completed initial production testing.
4QFY98 Successfully completed live-fire testing.
Completed initial operational test and evaluation.
Current Continue performance-enhancing product improvement program, which was initiated in FY97.
Continue SADARM low-rate initial production.
Conducted reliability/lot acceptance testing.

PROJECTED ACTIVITIES
3QFY00 Limited user test.
TBD Milestone III.
TBD Full-rate production.
TBD First unit equipped.
FY03 Commence product-improved SADARM production.

PRIME CONTRACTORS
GenCorp (Azusa, CA)

* See appendix for list of subcontractors

Shape the Battlespace

Conduct Decisive Operations

Small Arms

MK19-3

M16

M4

M249

M240B

MISSION

Reassure, deter, and if necessary, compel adversaries by enabling individuals and small units to engage targets with accurate, lethal, direct fire.

DESCRIPTION AND SPECIFICATIONS

M16A2 Rifle: A lightweight, air-cooled, gas-operated rifle. An improved version of the M16A1, the M16A2 incorporates improvements in iron sight, pistol grip, stock, and overall combat effectiveness. Accuracy is improved by incorporating an improved muzzle compensator, three-round burst control, and a heavier barrel; and by using the heavier North Atlantic Treaty Organization standard ammunition, which is also fired by the squad automatic weapon. **M16A4 Rifle:** An M16A2 rifle with a flat-top upper receiver accessory rail and a detachable handle/rear aperture sight assembly. **M4 Carbine:** A compact version of the M16A2 rifle, with a collapsible stock, a flat-top upper receiver accessory rail, and a detachable handle/rear aperture sight assembly. With the M4, the individual soldier operating in close quarters can engage targets at extended range with accurate, lethal fire. It achieves over 85% commonality with the M16A2 rifle and will replace all .45 caliber M3 submachine guns, selected M9 pistols, and M16 series rifles. **Modular Weapon System (MWS):** The MWS is a system of accessory rails mounted in place of the forward hand guards on M16A4 rifles and M4 carbines. These permit the no-tools, field attachment of day or night sights, aiming lights, flashlights, ancillary weapons, and other accessories, based upon mission specific requirements. **M249 Squad Automatic Weapon (SAW):** The M249 is a lightweight, gas-operated, one-man-portable automatic weapon capable of delivering a large volume of effective fire at ranges up to 800 meters. Two M249s are issued per infantry squad. It is scheduled to replace the M60 7.62 mm medium machine gun in certain units. **M240B Medium Machine Gun:** The M240B is a ground-mounted, gas-operated, crew-served machine gun. This highly reliable 7.62 mm machine gun delivers more energy to the target than the smaller caliber M249 SAW. It will be issued to infantry, armor, combat engineer, and special force units that require medium support fires and will replace the ground-mounted M60 series machine guns currently in use. **MK19-3 40 mm Grenade Machine Gun:** A self-powered, air-cooled, belt-fed, blowback-operated weapon, the MK19-3, is designed to deliver accurate, intense, and decisive firepower against enemy personnel and lightly armored vehicles. It is scheduled to replace selected M2 heavy machine guns in selected units and will be the primary suppressive weapon for combat support and combat service support units. The MK19-3 is mounted on the HMMWV, M113 FOV, five-ton trucks, and selected M88A1 recovery vehicles.

	M4	M16A2/A4	M249	M240B	MK19-3
Caliber:	5.56 mm	5.56 mm	5.56 mm	7.62 mm	40 mm
Weight:	*7.5 lb	*8.8 lb	16.5 lb	27.6 lb	72.5 lb
Max Effective Range:	600m at 500m pt	800m/600m at 550m pt	1000m at 600m pt	1,800m at 800m pt	2,200m at

*(at: area target, pt: point target.) *Loaded weight with sling and one magazine.*

FOREIGN MILITARY SALES

Numerous foreign countries purchase U.S. small arms.

PROGRAM STATUS

MWS: FY98 Materiel release.
1QFY99 First unit equipped.
M16A2: FY98 Completed Army procurement.
M16A4: In production to fulfill modular rifle requirements.
M4: In production.

PROJECTED ACTIVITIES

FY00 Continue M249 SAW production.

PRIME CONTRACTORS

M4 Carbine and M16A4 Rifle: Colt's Manufacturing (Hartford, CT)
M16A2, M249 Squad Automatic Weapon, and M240B Medium Machine Gun: FN Manufacturing (Columbia, SC)
MK19-3 Grenade Machine Gun: Saco Defense (Saco, ME)

* See appendix for list of subcontractors

Protect the Force

Conduct Decisive Operations

Stinger

UNITED STATES ARMY

MISSION
Provide short-range air defense for brigade, division, and corps area combat units against cruise missiles, unmanned aerial vehicles (UAVs), low-flying fixed-wing aircraft, and helicopters.

DESCRIPTION AND SPECIFICATIONS
The Stinger program has been restructured to support the Army Vision. Stinger, a fire-and-forget infrared missile system mounted on a variety of platforms, is the only air defense weapon in the forward area. Stinger has been fielded on MANPADS, Avenger, Kiowa Warrior, Bradley Linebacker, and the the U.S. Marine Corps' Light Amphibious Vehicle-Air Defense. This missile homes in on the heat emitted by fixed-wing aircraft or helicopters. Stinger uses an eject motor to propel the missile a safe distance away from the gunner; a flight motor then ignites and propels it to the target. A proportional navigation system enables it to fly an intercept course to the target. The Stinger program has evolved from the Redeye, to Stinger Basic, followed by Stinger Post, to the Stinger Reprogrammable Microprocessor (Stinger-RMP). The Block I software and hardware changes to the Stinger-RMP missile provide a greatly improved capability to engage advanced cruise missile and UAV threats.

Guidance: Passive infrared and ultraviolet homing
Speed: Supersonic
Navigation: Proportional with lead bias
Weight: 34.5 lb
Diameter: 2.75 in
Length: 60 in

FOREIGN COUNTERPART
Britain: Blowpipe, Javelin; Russia: SA-7, SA-14, and SA-16; Sweden: RBS-70.

FOREIGN MILITARY SALES
Denmark, Germany, Greece, Israel, Italy, The Netherlands, Pakistan, Portugal, Saudi Arabia, Sweden, Switzerland, Taiwan, Turkey, and the United Kingdom.

PROGRAM STATUS
Block I upgrades to the Stinger-RMP missile will continue through FY10.

PROJECTED ACTIVITIES
The Army plans include funding for extending the service life and continuing the upgrade of missiles to the Block I configuration.

PRIME CONTRACTORS
Raytheon (Tucson, AZ)

* See appendix for list of subcontractors

Protect the Force

Striker

UNITED STATES ARMY

MISSION
Perform 24-hour terrain surveillance, target acquisition, target location, and mission execution in heavy and light divisions.

DESCRIPTION AND SPECIFICATIONS
The Striker will replace M981 Fire Support Team Vehicles (FISTVs) in heavy divisions and become a new asset to light divisions. It operates as an integral part of the brigade reconnaissance troop, providing Combat Observation Lasing Team (COLT) and fire support mission planning and execution. The Striker designates targets for laser-guided ordnance.

The Striker is built on a M1025 armored High Mobility Multipurpose Wheeled Vehicle (HMMWV). The mission equipment package includes: laser rangefinder/designator (G/VLLD); AN/TAS-4B night sight; handheld terminal unit (HTU); lightweight computer unit (LCU); hosts forward observer software (FOS); inertial navigation system (INS); and Enhanced Precision Lightweight Global Positioning System Receiver (EPLGR).

Length: 15.92 ft
Width: 7.2 ft
Height: 8.5 ft
Weight: 10102 lb combat-loaded
Power train: 6.5 liter, 8v 160-hp diesel engine with Turbo Hydra-Matic 4L80-E, four-speed automatic transmission
Cruising range: 320 mi
Road speed: 55 mph
Crew: 3
Vehicle armament: 7.62 mm, M240B machine gun
Distribution: Brigade reconnaissance platoons in heavy and light divisions, armor/infantry brigades/battalions; cavalry regiments/squadrons, field artillery battalions
Current models/variants: M707 Striker

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Current In low-rate initial production.

PROJECTED ACTIVITIES
2QFY01 Full-rate production award.
2QFY01 First unit equipped.

PRIME CONTRACTORS
Systems and Electronics Inc. (SEI) (St. Louis, MO)

* See appendix for list of subcontractors

Tank Main Gun Ammunition

UNITED STATES ARMY

MISSION
Provide and maintain the United States tank fleet with lethality capable of overmatching any adversary.

DESCRIPTION AND SPECIFICATIONS
The 120mm family of tank ammunition is the most advanced and lethal tank ammunition in the world. Two types of ammunition are fired from the M256 cannon on the M1A1 and M1A2 Abrams tank: kinetic energy (KE) ammunition is used to defeat the heavy frontal armor of main battle tanks; multi-purpose (MP) ammunition is used against lightly-armored vehicles, helicopters, buildings, bunkers, and infantry.

KE lethality is optimized by firing a maximum-weight projectile at the greatest velocity possible. The 120 mm series of KE ammunition (M829, M829A1, M829A2, and M829E3) have evolved using penetrators of increased mass and length, lighter sabots, and more powerful propulsion systems. There are two key components of U.S. KE rounds: depleted uranium (DU) penetrators that provide extremely dense material with excellent armor penetration capabilities and aluminum or lightweight graphite composite sabots.

MP rounds use a high explosive, shaped-charged warhead to provide blast, penetration, and fragmentation effects to defeat a wide array of targets. The M830A1 uses a sub-calibered discarding sabot projectile which gives it higher velocity, decreased drag, and increased accuracy over the M830 cartridge. Its proximity sensor provides the U.S. tank fleet its first credible anti-helicopter capability. The XM908 high explosive obstacle reduction cartridge reduces large concrete obstacles. It is identical to the M830A1 except that the proximity sensor is replaced with a steel nose. It was fielded to U.S. forces in Korea when the combat engineering vehicle with its 165 mm gun was removed from the Army inventory.

Smart precision munitions enable precision strikes against high-value targets at extended ranges. The XM1007 Tank Extended Range Munition-Kinetic Energy (TERM-KE) is a soft-launch, rocket-boosted, terminally-guided, kinetic-energy munition that could be used against moving and maneuvering targets. It is a candidate in the generic TERM science and technology objective.

FOREIGN COUNTERPART
North Atlantic Treaty Organization (NATO) tanks employ KE and MP ammunition, but only France and the U.K. use DU penetrators. No NATO countries use tank ammunition with composite sabots or proximity switches. The XM1007 has no counterparts worldwide.

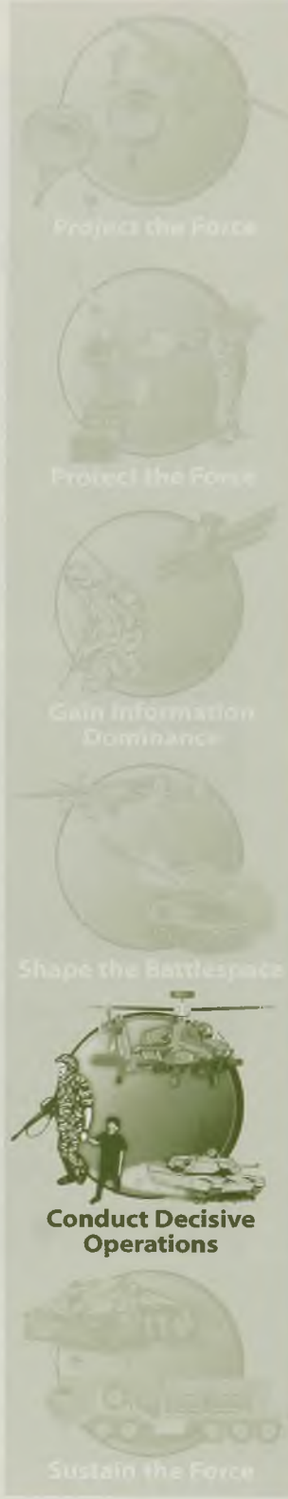
FOREIGN MILITARY SALES
M829: Kuwait and Saudi Arabia. **M830:** Kuwait and Egypt.
M829A1 and M830A1 cartridges: Approved for foreign military sales in 4QFY99 by Vice Chief of Staff, U.S. Army.

PROGRAM STATUS
M829, M829A1, M829A2, M830, and M830A1: Fielded.
M829A2 and M830A1: In production with deliveries scheduled to be completed in FY00.
M829E3: In the engineering and manufacturing development phase.
XM1007 TERM-KE: Undergoing concept exploration; a candidate for the TERM STO.

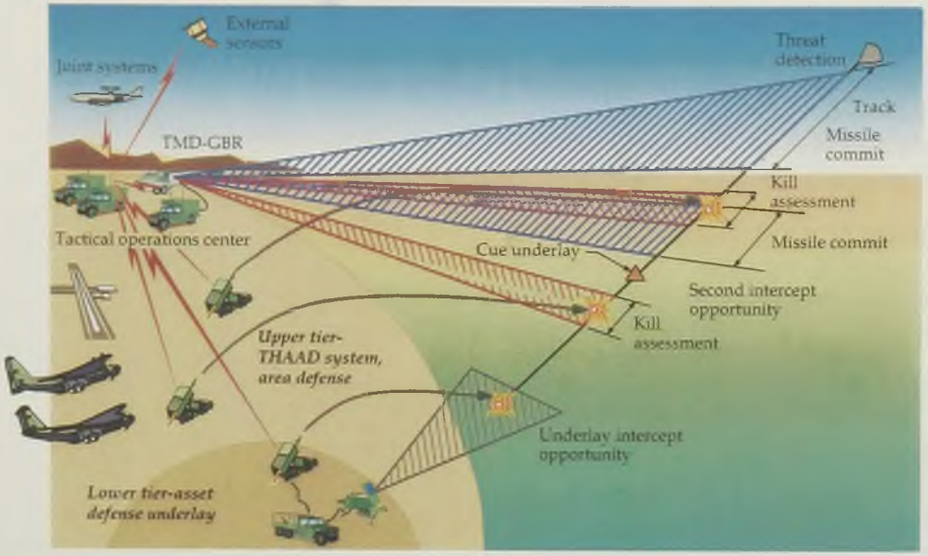
PROJECTED ACTIVITIES
FY00 Continue production of the M829A2 and M830A1 with congressionally added funding.
FY02 Commence M829E3 initial production.

PRIME CONTRACTORS
M830A1 and M829E3: Alliant Techsystems (Hopkins, MN)
XM1007: Alliant Techsystems (Clearwater, FL)
M829A2: Primex (St. Petersburg, FL)

* See appendix for list of subcontractors



Theater High Altitude Area Defense (THAAD) System



UNITED STATES ARMY

Theater High Altitude Area Defense (THAAD) System

Overmatch Capabilities

Protect the Force

MISSION

Provide theater-wide area defense of tactical ballistic missile (TBM) threats, including weapons of mass destruction, operating in the endo- and exo-atmosphere and directed against military forces and strategic geopolitical assets.

DESCRIPTION AND SPECIFICATIONS

The Theater High Altitude Area Defense (THAAD) system is a theater missile defense (TMD) weapon system designed to intercept short- and medium-range missile threats that will employ increasingly sophisticated warhead technologies. The THAAD system will augment existing and other planned TMD capabilities by engaging threat missiles at higher altitudes and at longer ranges. This intercept capability negates the use of weapons of mass destruction. THAAD's hit-to-kill guidance approach provides a high degree of lethality compared to existing systems with fragmentation warheads.

The THAAD system consists of missiles; launchers; battle management/command, control, communication, computers, and intelligence (BM/C4I) elements; radars; and support equipment. The missile is a hypervelocity, single-stage, solid propellant booster with a unique endo-/exo-atmospheric kill vehicle (KV). The hit-to-kill technology KV, designed to destroy threat warheads, guides to the target using an infrared homing seeker. The launcher uses the Army standard Palletized Loading System (PLS) 16-ton truck with a capacity of at least eight missile rounds on a missile pack. The High Mobility Multipurpose Wheeled Vehicle (HMMWV)-based BM/C4I centers will coordinate with the theater air defense command and control system and will control both the engagement and force operations for THAAD.

The BM/C4I will provide automated acquisition and identification of TBM threats, process and disseminate track data, assign weapons, monitor engagements, and guide sensor operations. The THAAD X-band phased-array radar acquires the target at long ranges, tracks it, and provides in-flight updates to the THAAD interceptor prior to intercept. The radar also performs kill assessment to support the decision to commit additional interceptors or to cue lower tier systems such as the Patriot system. The THAAD system will support passive defense and attack operations by providing impact-point predictions and launch point estimations. The THAAD system will be fully transportable by C141/C5/C17 military aircraft. Once in theater, the system will use Army standard movers to be highly mobile on highways and unimproved roads. These system capabilities will allow THAAD to be rapidly deployed to any theater on short notice.

FOREIGN COUNTERPART

THAAD System: France and Italy: SAAM, SAMP/N, SAMP/T. **THAAD Radar:** Russia: Hen House, Dog House, and Try Adds radars; Germany: MSAM.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

The program is preparing for the engineering and manufacturing development phase. Eleven flight tests have been completed with two successful intercepts. The user operational evaluation system battalion in Ft. Bliss, TX, supports flight testing and soldier training.

PROJECTED ACTIVITIES

3QFY00 Milestone II decision.
3QFY02 System critical design review.

PRIME CONTRACTORS

THAAD System: Lockheed Martin (Sunnyvale, CA)
THAAD Radar: Raytheon (Bedford, MA) (As of FY98, Raytheon has been a prime sub to Lockheed Martin.)

* See appendix for list of subcontractors

TOW Fire and Forget (F&F)

UNITED STATES ARMY

MISSION
Provide the next-generation missile for light, early entry contingency forces equipped with the TOW Improved Target Acquisition System (ITAS) platforms. Improve survivability (F&F eliminates gunner tracking/guiding requirements) and allow light infantry to defeat the threat of close combat tanks equipped with advanced armor and active protective systems with minimal soldier exposure time.

DESCRIPTION AND SPECIFICATIONS
TOW Fire and Forget (F&F) System is an integral component of the Army Vision and its plan for light forces. The TOW F&F System will be comprised of a missile system that includes the encased TOW F&F missile, the shipping and storage container, and ITAS platform applique kits. Key missile requirements, which are not subject to CAIV tradeoffs include:

- Compatibility with TOW ITAS ground platforms
- Fire-and-forget mode of operation with an alternate command guidance mode as backup
- Increased range, lethality, and platform survivability
- Ability to counter active protection system threats
- Modular design for future growth and shelf life extension.

Future growth will be accommodated by the TOW F&F modular design and by the transition of applicable technologies from ongoing technology base programs.

FOREIGN COUNTERPART
Euro Missile: TRIGAT-C

FOREIGN MILITARY SALES
None

PROGRAM STATUS
The Army originally funded a two-pronged effort to mitigate TOW missile stockpile and emerging threat active protection systems concerns. Based on the light anti-tank study, the Army decided to increase light force survivability and mitigate TOW missile stockpile concerns. A request for proposal was released in 1QFY00. The FY01-05 budget estimate submission funds the TOW F&F Program.

PROJECTED ACTIVITIES
3QFY00 Milestone II decision.
3QFY00 Award engineering and manufacturing development contract.

PRIME CONTRACTORS
To be determined

Shape the Battlespace

Conduct Decisive Operations

* See appendix for list of subcontractors

TOW Improved Target Acquisition System (ITAS)

UNITED STATES ARMY

TOW Improved Target Acquisition System (ITAS)

Overmatch Capabilities

MISSION

Increase target acquisition ranges and fire all configurations of TOW missiles while allowing room for growth for TOW missile improvements/follow-on missiles; increasing maintainability and reducing logistics requirements; and improving system engagement performance.

DESCRIPTION AND SPECIFICATIONS

The TOW Improved Target Acquisition System (ITAS) is a materiel change to the current Ground TOW 2 Weapon System for first-to-deploy light forces. ITAS has an improved design with built-in test/built-in test equipment for increased maintainability and reduced logistics requirements. It also features an improved man-machine interface that improves system engagement performance.

The ITAS will be fielded at battalion level, replacing TOW 2 in light infantry units. The ITAS modification kit consists of an integrated (day/night sight with laser rangefinder) target acquisition subsystem, fire control subsystem, battery power source, and modified traversing unit. The ITAS will operate from the High Mobility Multipurpose Wheeled Vehicle (HMMWV) and the dismount tripod platform.

FOREIGN COUNTERPART

No known direct foreign counterpart. The Hughes Aircraft Company, Spanish-assembled, light-weight launcher is a somewhat similar but less capable system.

FOREIGN MILITARY SALES

None

PROGRAM STATUS

4QFY96 Awarded low-rate initial production (LRIP) I contract (25 units).
2QFY98 Awarded LRIP II (74 units).
4QFY98 First unit equipped (A Troop, 1–17th Cavalry, 82nd Airborne Division).
2QFY99 Successfully conducted limited user test II.
4QFY99 Awarded full-rate production contract (102 systems), with priced annual options for FY00–03.
1QFY00–2QFY00 Conducted TOW ITAS fielding to 3rd Brigade, 82nd Airborne Division.
2QFY00 Awarded contract to transition ITAS interim contractor support to contractor logistics support.

PROJECTED ACTIVITIES

3QFY00 Milestone III decision to enter FRP.

PRIME CONTRACTORS

Raytheon (McKinney, TX)

* See appendix for list of subcontractors

Wolverine

UNITED STATES ARMY

MISSION
Provide the heavy brigade combat team with a MLC 70-ton gap-crossing capability of up to 24 meters with the mobility, survivability, sustainability, and supportability of the maneuver force.

DESCRIPTION AND SPECIFICATIONS
The Wolverine program is terminated in the FY01 President's Budget in support of the Army Vision and its modernization efforts. The decision to terminate the program was based on an assessment of affordability, operational risk, and Army priorities; however, a valid requirement still exists for heavy gap crossing capabilities.

The Wolverine launcher is mounted on a M1A2 Abrams system enhancement program chassis and is operated by a two-man crew. The bridge is 26 meters long and can span gaps up to 24 meters. It supports a military-load-class, 70-ton crossing at 16 kph. The bridge is launched from under armor in four minutes and retrieved in less than eight minutes.

A critical force modernization item for the engineer regiment, the Wolverine enables heavy force maneuver by allowing units to rapidly transit tank ditches, road craters, and partially damaged bridge sections. This enabler increases the maneuver force's survivability by reducing the time spent in vulnerable areas waiting to cross. The current Armored Vehicle Launched Bridge (AVLB) minimally supports Abrams tank unit crossings at reduced-gap length (15 m) and reduced crossing speeds.

FOREIGN COUNTERPART
China: Type 84; France: AMX (AVLB); Germany: BLG-60, Biber, Leguan Bridge on Leopard I; Russia: MTU-20, MTU-72; Slovakia: MT-55; South Korea: M60A1 AVLB (no K1-based vehicle); United Kingdom: Chieftain.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
3QFY98 Awarded low-rate initial production (LRIP) contract.
4QFY99 First vehicle delivery.
1QFY00 Completed extended logistics review.
4QFY99–QFY00 Conducted developmental testing.
FY99–00 Live fire testing of six pilot vehicles.
Current Undergoing engineering and manufacturing development.
3QFY99 Two manufacturing pilot vehicles began developmental testing.
2QFY00 The four remaining pilots delivered for extended logistics analysis.

PROJECTED ACTIVITIES
FY00 Conduct initial operational test and evaluation.
1Q–3QFY00 Conduct developmental testing/operational testing.
4QFY00 Field LRIP vehicles to the first digitized division.

PRIME CONTRACTORS
General Dynamics (Sterling Heights, MI), MAN GHH (Germany)

* See appendix for list of subcontractors

Conduct Decisive Operations

XM777 Joint Lightweight 155 mm Howitzer (LW155)

XM777 Joint Lightweight 155 mm Howitzer (LW155)

Overmatch Capabilities

MISSION
Provide close and deep fire support to Army light and Marine Corps maneuver forces.

DESCRIPTION AND SPECIFICATIONS
The XM777 Joint Lightweight 155mm Howitzer (LW155) is a joint Marine Corps/Army program, in which the Marine Corps funds the howitzer research, development, test, and evaluation for towed artillery digitization and other automation enhancements. It will replace the M198 howitzer as a general support system for Army light forces. The XM777 is an integral component of the Army Vision and its plan for light forces. The Marine Corps will use the weapon in direct support, replacing all existing cannon systems. The XM777 incorporates innovative designs to achieve lighter weight, without sacrificing the range, stability, accuracy, or durability of the current system. The lighter weight is achieved through lower trunnion height and the use of high-strength titanium, a primary component of the lower carriage and cradle assembly. The XM776 cannon tube is a derivative of the U.S. M284 and M199 cannon tubes: ballistically similar to the M199 cannon tube to provide the range of the M198 howitzer. The XM777's lighter weight, smaller footprint, and lower profile provide improved strategic deployment, tactical mobility, and survivability. The automatic primer feeding mechanism, loader-assist, digital fire control, and other automation enhancements provide improved survivability, lethality, and combat reliability, and will provide light artillery with a semi-autonomous capability that is currently found only in self-propelled howitzers.

Weight: 9000 lb or less
Emplace, displace: 2–3 min, 1–2 min
Maximum range: 30–40 km (assisted)
Rate-of-fire: 5–8 rd/min max, 2 rd/min sustained
Ground mobility: Current five-ton truck, Future Medium Truck, 5 Ton (FMTV), Marine Corps Medium Truck, 5 Ton (MTVR)
Air mobility: MV-22, SH53D/E, CH47D
155mm compatibility: All fielded and developing munitions
Digital fire control: Self-locating and pointing, on-board firing data computation, digital and voice communications, self-contained power supply.

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
The current LW155 engineering and manufacturing development (EMD) phase is a cooperative effort with the United Kingdom (U.K.) and Italy.

PROGRAM STATUS
Current In source selection.

PROJECTED ACTIVITIES
FY00 Deliver first XM777 prototype.
4QFY01 Milestone III scheduled.
FY02 The contract with Vickers Shipbuilding and Engineering Ltd., (VSEL) of the U.K. includes options for the first two years of production. VSEL's plan is to use U.S. sources for a substantial portion of production and assembly.
1QFY02 Conclude EMD phase.
1QFY03 Achieve Marine Corps initial operational capability.
FY03 Begin Army production.

PRIME CONTRACTORS
Vickers Shipbuilding and Engineering, Ltd. (U.K.)

* See appendix for list of subcontractors

Project the Force

Protect the Force

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Sustain the Force

Direct Fire Lethality (DFL) Advanced Technology Demonstration (ATD) (1999–2001)

The Direct Fire Lethality (DFL) ATD focuses on enhancing the anti-armor lethality of the Abrams tank, by maximizing warhead/penetrator effectiveness and increasing tank gun accuracy. The DFL ATD major effort is an advanced 120 mm kinetic-energy (KE) cartridge. It will utilize a novel penetrator and micro-electro-mechanical systems (MEMS) accelerometers and miniature radial thrusters to significantly improve hit and kill capability against future threats, especially those protected by explosive reactive armor (ERA) appliqué arrays. (Advancements in threat ERA will diminish the performance of existing KE tank ammo, threatening the Abrams lethality overmatch.)

In FY00, the ATD will demonstrate novel penetrator lethality up to 70% greater than existing M829A2 KE tank rounds. In FY01, it will demonstrate radial thruster capability to correct for multiple-jump errors in achieving 30–70% increase in system accuracy. The ATD exit criteria requires that, in FY01, an integrated 120 mm KE cartridge can defeat the 2005 ERA-protected threat, with:

- Up to seventy percent increase in lethality over the M829A2; and
- Thirty to seventy percent increase in system accuracy under stationary conditions over the M829A2, fired from an M1A2 Abrams tank.

The DFL ATD will provide the Army with state-of-the-art tank armament for fielding in FY05.

Mine Hunter/Killer (MH/K) Advanced Technology Demonstration (ATD) (1998-2001)

The Mine Hunter/Killer (MH/K) ATD will demonstrate a mounted conceptual vehicular system that semi-autonomously detects, locates, and neutralizes land mines at a high operational tempo, without exposing personnel to the threat. MH/K technologies will be adaptable to light-vehicle platforms, and to medium or heavy armored vehicles. The MH/K system will perform route-clearance missions in support of mounted or dismounted combat maneuver forces and maneuver support forces during major theater wars (MTW), smaller-scale contingencies (SSC), and support and sustainment operations (S&SO).

The MH/K system will automatically detect and locate metallic and non-metallic anti-tank mines. The position/location information will be used to direct a neutralizer at each individual mine, and to prompt the operator to engage and neutralize the target. The classification and location data will also be communicated to other tactical units. Systems to be evaluated include the following:

Standoff detection sensors

- Forward-looking infrared (FLIR)
- Forward-looking ground penetrating radar (GPR)
- Passive millimeter wave
- Conventional mine detection systems on small tethered vehicle

Standoff neutralization devices

- Direct-attack projectiles
- Multiple fragment and shaped-charge, top-attack munitions
- Emerging directed-energy beams
- Explosive systems

The ATD supports the Ground Stand-off Mine Detection System and Breacher P3I.

Precision Guided Mortar Munition (PGMM) Advanced Technology Demonstration (ATD) (1998–2001)

The Precision Guided Mortar Munition (PGMM) is an affordable, 120 mm, laser-guided mortar munition, with an extended-range glide capability that will significantly improve accuracy and double the current mortar range. The PGMM will provide the maneuver commander with a weapon capable of providing responsive, precise, standoff defeat of threats behind protective cover. This will improve U.S. infantry survivability, reduce collateral damage, minimize non-combatant casualties, and decrease the logistics burden.

The maneuver battalion commander's target set includes threats such as crew-served weapons, command posts, observers, and so on, behind protective cover, or in fortified positions such as bunkers and buildings. This new capability will improve the survivability of U.S. infantry by enabling the defeat of fortified and urban targets, without requiring the infantry to attack them at close range. Using a precision round with a small-burst radius to defeat targets reduces damage to surrounding structures and minimizes noncombatant casualties.

Essential Research and Development/Leap-Ahead

Focused investment in Science and Technology (S&T) is essential to developing and maintaining the capabilities needed to ensure success on future battlefields. S&T programs support the incremental improvement of current systems. They are also the source of "leap-ahead" technologies, which have the potential to provide a significant, even revolutionary, improvement over present capabilities. Science and Technology investment is critical to developing and maintaining future Information Dominance and Overmatch Capabilities.

S&T funding is guided by a set of over 200 Science and Technology Objectives (STOs). STOs state a specific, measurable scientific advancement to be achieved by a given fiscal year. They are used to focus and stabilize the Army's S&T program, and assist the Army leadership in providing clear guidance to S&T organizations. Examples of STOs include Advanced Mobility Systems for armored vehicles and Advanced Mine Detection Sensors to reduce individual and vehicle vulnerability to mines.

S&T categories include Basic Research (6.1), Applied Research (6.2), and Advanced Technology Development (6.3). Basic Research includes all efforts of scientific study and experimentation with a high potential to improve warfighting capabilities. Applied Research efforts are those directed toward the solution of specific military problems, excluding major development projects. Finally, Advanced Technology Development programs are efforts which have moved into the development of hardware ready for operational testing. Major current S&T programs include the Tactical High Energy Laser, Advanced Tank Armament System, and the Medium Extended Air Defense System.

Targeted investment of S&T funding is critical to maximizing the return from the limited resources available. The Army's Science and Technology program seeks to leverage technological developments of the other Services, government agencies, industry, and academia. Aside from its own S&T efforts, the Army supports the six Joint Strategic Research Objectives (SROs), which include Biominetics, Nanoscience, Smart Structures, Broad Band Communications, Intelligent Systems, and Compact Power Sources.

The Army's Science and Technology program is the foundation of its long-term modernization strategy. As such, it is an essential element in the United States' ability to dominate land warfare in the next century. We must therefore continue to support those investments that provide the solutions to tomorrow's technology requirements.

PROGRAM DEFINITION AND RISK REDUCTION:

- Advanced Tank Armament System (ATAS)
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)
- Medium Extended Air Defense System (MEADS)
- National Missile Defense (NMD)

CONCEPT EXPLORATION:

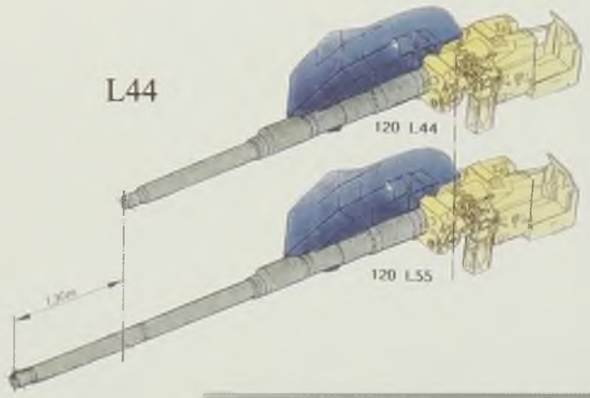
- Enhanced Coastal Trafficability and Sea State Mitigation (ECT/SSM) ATD
- Future Scout and Cavalry System ATD
- Joint Transport Rotorcraft (JTR) ATD
- Line-of-Sight Anti-Tank (LOSAT)
- Objective Crew Served Weapon (OCSW) ATD

ENGINEERING AND MANUFACTURING DEVELOPMENT:

- Tactical High Energy Laser (THEL)

Advanced Tank Armament System (ATAS)

120MM Cannons for Abrams Main Battle Tank



UNITED STATES ARMY

MISSION

Provide next-generation armament system technologies for the Abrams main battle tank and other direct-fire weapon system platforms; increase lethality and accuracy at extended ranges; and enable the crew to engage targets faster and more easily.

DESCRIPTION AND SPECIFICATIONS

The Advanced Tank Armament System (ATAS) program is working on two potential improvements: a longer-barrel cannon for the Abrams (M256E1 cannon) and extended-range fire control system improvements for all direct fire platforms.

The longer barrel of the M256E1 increases muzzle velocity and effective range, increasing the lethality of current kinetic energy (KE) tank ammunition and expanding the battlespace for the Abrams tank on future battlefields.

ATAS is investigating several technologies to improve fire control at extended ranges. Automatic target detection and tracking software decreases the time needed to acquire and engage enemy targets. Firing accuracy can be greatly enhanced by the addition of an improved muzzle reference system, advanced fire control solutions, state-of-the-art lead predictors, and improved gun servos and actuators. These improvements will enable the tank crew to quickly and accurately engage and destroy enemy targets at extended ranges.

FOREIGN COUNTERPART

Several countries already include ATAS components in their tank fleets. The French LeClerc incorporates a long-barrel 120 mm cannon, improved fire control, and an autoloader. The German Leopard is introducing a long barrel cannon with improved gun servos and actuators. The Israeli Merkava employs auto target trackers to improve gun accuracy.

FOREIGN MILITARY SALES

The U.S. continues to sell Abrams tanks to select allies. The ATAS program can provide added value to these potential sales with the longer gun and fire control improvements.

PROGRAM STATUS

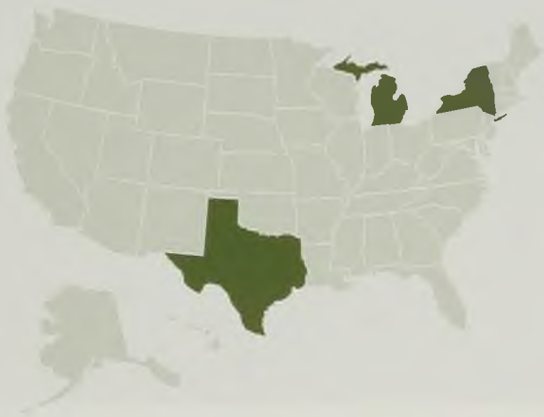
- Near-term efforts focus on evaluating the L55 German (long) gun tube for integration into the Abrams M256E1 cannon and completing testing of the automatic target tracker (ATT) and electronic muzzle reference sensor (EMRS). Emphasis will shift to evaluation and testing of advanced gun barrel coatings to improve weapon accuracy.
- Benet Labs is evaluating actual L55 hardware; General Dynamics Land Systems is investigating integration issues under an L55/M256E1 integration contract.
- The ATT has been integrated into the gunner's position of an Abrams tank and is being tested at Aberdeen Proving Ground, MD. Testing is proceeding well and is scheduled for completion in early FY00. EMRS durability testing at Twenty-Nine Palms, CA, is also scheduled for completion in early FY00.

PROJECTED ACTIVITIES

FY01 Conduct integration test and evaluation of the German L55/M256E1
FY00 Complete user testing of ATT
FY00 Complete durability testing of EMRS
FY02 Continue advanced gun-coating development

PRIME CONTRACTORS

Vehicle Integration: General Dynamics (Sterling Heights, MI)
Fire Control System: Raytheon (Plano, TX)
L55 Gun Tubes: Rheinmetall (Ratingen, Germany)
M256E1 Gun Tubes: Benet Labs (Watervliet Arsenal, NY)



* See appendix for list of subcontractors

Joint LACMD Elevated Netted Sensors Systems (JLENS)

Joint LACMD Elevated Netted Sensors Systems (JLENS)

Essential R&D/Leap-Ahead Technologies

MISSION

Provide over-the-horizon land attack cruise missile defense; enhance cruise missile detection; provide extended engagement ranges that support the Air-Directed Surface-to-Air Missile (ADSAM) engagement concept for current air defense weapons such as Patriot, Standard Missile, and the Advanced Medium Range Air-to-Air Missile.

DESCRIPTION AND SPECIFICATIONS

The Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), is a cost-effective, airborne sensor platform that provides over-the-horizon land attack cruise missile defense. The JLENS advanced sensor technologies, when elevated, will provide battlefield commanders with the following:

- Detection and tracking of low-altitude threats (cruise missile and aircraft) that may go undetected by surface-based sensors due to terrain masking and line-of-sight locations of targets
- Support of ADSAM engagements, including engage-on-remote and forward pass
- Development and display of the single integrated air picture
- Detection and tracking of enemy surface units

These technologies provide a low cost, long-endurance capability to protect U.S. troops and assets in foreign lands, and provide a significant contribution to the defense of the continental U.S. and the public from cruise missile attacks.

The JLENS sensor suite consists of a surveillance radar (SR) and a precision track and illumination radar (PTIR). SR provides a long-range air picture enhanced by identification friend or foe (IFF). This information, distributed via the Joint Data Network and Joint Composite Tracking Network (presently LINK 16 and cooperative engagement capability), contributes to the SIAP. PTIR is a steerable, lightweight array capable of tracking multiple targets in a sector. JLENS prioritizes remote and local tracks autonomously or accepts external requests for precision tracking and engagement support.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

2QFY96 The Department of Defense and the Joint Chiefs of Staff directed the Army to take the lead in establishing a joint project office (Army, Navy, and Air Force). The U.S. Army Space and Missile Defense Command established the joint project office in Huntsville, AL, with Navy and Air Force deputy program managers.

4QFY97 Completed approval of the JLENS acquisition strategy. The JLENS project office then initiated concept studies and related risk-reduction efforts, subsequently issuing a competitive request for proposals.

2QFY98 Awarded JLENS demonstration contract to Raytheon.

2QFY99 Designated by the Army acquisition executive as an acquisition category II program. The JLENS program is currently in the program definition and risk reduction phase of the acquisition cycle, concentrating on prototype development and risk reduction activities.

PROJECTED ACTIVITIES

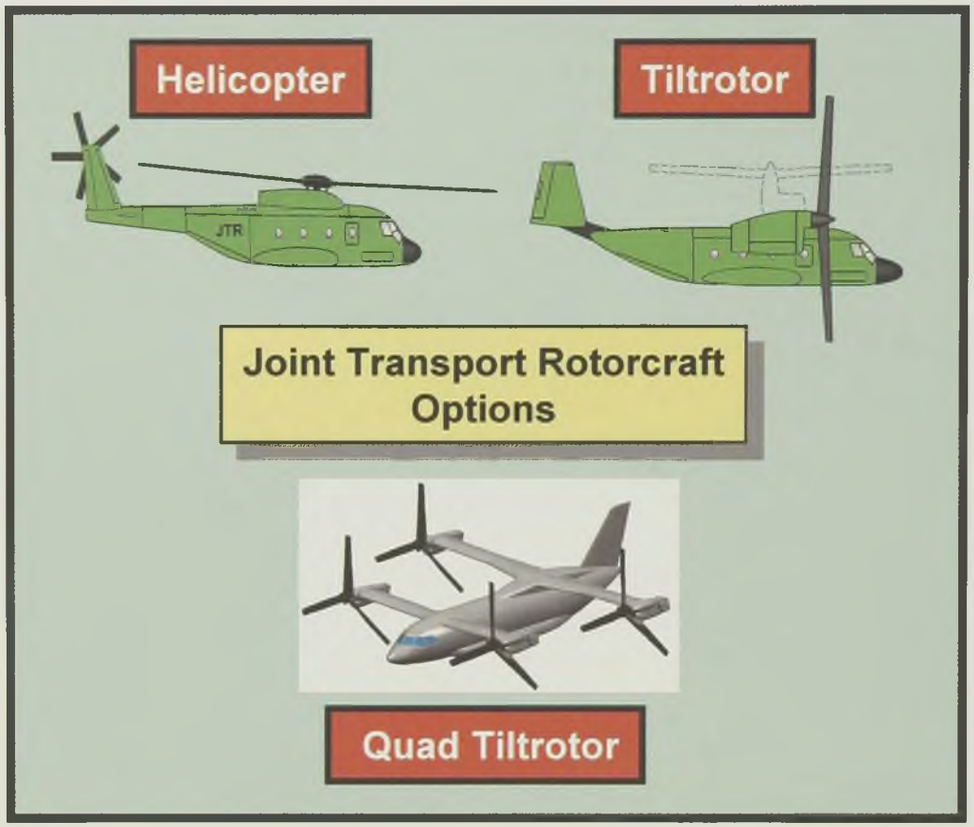
FY00–05 System design, integration, and demonstration efforts, leading to milestone II decision.

PRIME CONTRACTORS

Raytheon (Bedford, MA; El Segundo, CA)

* See appendix for list of subcontractors

Joint Transport Rotorcraft (JTR)



Joint Transport Rotorcraft (JTR)

Essential R&D/Leap-Ahead Technologies

MISSION

Provide an affordable, long-range heavy-lift transport platform that includes Vertical Take-Off and Landing (VTOL) capability.

DESCRIPTION AND SPECIFICATIONS

The Joint Transport Rotorcraft (JTR) is envisioned as the DoD's next-generation, heavy lift transport platform for both troop and cargo transport missions. The JTR would replace the aging CH-47 Chinook helicopter in the 2015–2020 timeframe and may potentially replace the Navy/Marine Corps CH-53E Super Stallion.

The JTR could provide both operational and tactical mobility to the Objective Force commander. In its current conceptual form, it is being designed to carry the Future Combat Systems (FCS). In addition, it could transport weapons, ammunition equipment, troops and other cargo in support of combat units and operations-other-than-war. Its objective is to provide "hub-to-warrior" VTOL logistics delivery for C-130 size loads. Based on today's state-of-the-art, JTR could either be a helicopter, a tiltrotor, a quad-tiltrotor, or any other advanced rotorcraft configuration. At this stage of concept definition, the proposed JTR operational capabilities include the following:

- 175-320 kts speed
- 10–20 ton payload (@4000'/95 degrees F)
- 500–1000 km combat radius
- Ability to lift a standard MilVan from ship to shore (sea level, hot day)
- Self-deployability up to 2100 nmi
- Shipboard compatibility
- Reduced operation and support costs

Currently, JTR is a FY00–07 Army Science and Technology (S&T) program. It is a key part of the larger DoD FY00–10 rotorcraft S&T program, structured to provide the rotor, flight control, airframe, propulsion, drivetrain, crew station and survivability technologies required to meet DoD needs. The JTR goals are envisioned to include the following:

- Reduce structural weight by 20–25%
- Increase cruise efficiency by 20–25%
- Reduce specific fuel consumption by 40%
- Reduce drivetrain weight by 35%
- Increase maneuverability/agility by 100%
- Reduce life-cycle costs by 25–50%.

JTR's key enabling technology and demonstration programs address a majority of DoD requirements, and are strongly supported by the other Services. S&T is on-going in the following areas:

- High-temperature, fuel-efficient gas turbine engines
- High-torque, light-weight, low-maintenance drive system
- High-lift, efficient, low-vibration rotors with active flight controls
- Aerodynamically-efficient airframe and propulsion concepts
- Light-weight, affordable structure, based on innovative structural concepts, materials and processes
- Diagnostics, prognostics, self-repair concepts
- Advanced crew station and decision aiding tools

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

N/A

PROJECTED ACTIVITIES

N/A

PRIME CONTRACTORS

To be determined

Project the Force

Sustain the Force

Line-of-Sight Anti-Tank (LOSAT)

UNITED STATES ARMY

Line-of-Sight Anti-Tank (LOSAT)

Essential R&D/Leap-Ahead Technologies

MISSION

Provide highly lethal, accurate missile fire, effective against heavy armor systems at ranges exceeding tank main gun range, to help remedy the light infantry force lethality shortfall against heavy armor.

DESCRIPTION AND SPECIFICATIONS

The Line-of-Sight Anti-Tank (LOSAT) weapon system is an integral component of the Army Vision. LOSAT consists of Kinetic-Energy Missiles (KEM), and a Second Generation Forward-Looking Infrared (FLIR)/TV acquisition sensor, mounted on an air-mobile High Mobility Multipurpose Wheeled Vehicle (HMMWV) chassis. Key LOSAT advantages include:

- KEM overmatch lethality, which defeats all predicted future armored-combat vehicles and hardened high-value targets, including bunkers and reinforced urban structures
- deployability, including sling load and air drop
- compatibility with the early-entry forces

LOSAT also provides increased survivability and countermeasure effectiveness. LOSAT will operate to the maximum range of direct-fire combat engagements, providing dramatically increased rates of fire and enhanced performance under day and night, adverse weather, and obscured battlefield conditions.

KEM
Weight: 177 lb
Length: 112 in
Diameter: 6.4 in
Range: Greater than the Tube-launched, Optically-tracked, Wire-guided (TOW) Missile
Crew: 3

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

- Restructured program accelerates production start by two years.
- Completed initial design requirements allocation to fire unit and missile/launch pod performance requirements documents.
- Completed inertial measurement unit (IMU) performance verification ground tests.
- Completed the preliminary design review for the missile/launch pod and fire unit hardware and software designs.
- Completed two early soldier evaluations of the fire unit controls and displays layouts and functionality.

PROJECTED ACTIVITIES

- Conduct one risk-reduction missile flight to verify fire unit missile launch effects on HMMWV chassis.
- Complete initial design of the missile and fire unit and initiate materiel purchases for prototype test quantities.
- Continue hardware-in-the-loop and closed loop simulation evaluation and verification of hardware/software designs.
- Continue early soldier evaluations of emerging hardware/software designs.

PRIME CONTRACTORS

Lockheed Martin (Dallas, TX)

* See appendix for list of subcontractors

Project the Force

Shape the Battlespace

Conduct Decisive Operations

Medium Extended Air Defense System (MEADS)

UNITED STATES ARMY

Medium Extended Air Defense System (MEADS)

Essential R&D/Leap-Ahead Technologies

MISSION

Provide lower-tier theater air and missile defense to maneuver forces and other land component commanders' designated critical assets throughout all phases of tactical operations.

DESCRIPTION AND SPECIFICATIONS

The Medium Extended Air Defense System (MEADS) will utilize its netted and distributed architecture to ensure joint and allied interoperability, and to enable a seamless interface to the next generation of battle management command, control, communications, computers, and intelligence (BMC4I). MEADS' improved seeker/sensor components and its ability to link other airborne and ground based sensors facilitates the employment of its battle elements. This provides a robust 360 degree defense against the full spectrum of Theater Ballistic Missile (TBM), cruise missile, unmanned aerial vehicle, Tactical Air-to-Surface Missile (TASM), rotary, and fixed wing threats.

The MEADS will provide the following:

- Defense against multiple and simultaneous attacks by Short Range Ballistic Missiles (SRBMs), low cross-section cruise missiles, and other air-breathing threats to the force
- Immediate deployment for early entry operations with C-130 and C-17 deployability
- Mobility to displace rapidly and to protect maneuver force assets during offensive operations
- A distributed architecture and modular components to increase survivability and flexibility of employment in a number of operational configurations
- A significant increase in firepower with greatly reduced requirements for personnel and logistics

Given these characteristics, MEADS can rapidly respond to a variety of crisis situations and satisfy the needs of the joint operational and tactical commanders.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

MEADS has completed the project definition and validation phase.

4QFY99 Selected international contractor team to continue MEADS development.

PROJECTED ACTIVITIES

3QFY00 Begin a three-year risk reduction effort to minimize the technical, cost, and schedule risk of a follow-on, cooperative program.

PRIME CONTRACTORS

MEADS International was selected as the prime contractor to continue MEADS development during the risk reduction effort. This consortium comprises Lockheed Martin (U.S.), Alenia-Marconi (Italy), and DaimlerChrysler Aerospace (Germany)

* See appendix for list of subcontractors

National Missile Defense (NMD)

UNITED STATES ARMY

National Missile Defense (NMD)

Essential R&D/Leap-Ahead Technologies

MISSION

Defend the United States against limited strategic ballistic missile threats.

DESCRIPTION AND SPECIFICATIONS

The initial National Missile Defense (NMD) system will be a fixed-site, land-based system. It will operate in conjunction with the Integrated Tactical Warning and Attack Assessment (ITW/AA) system, and ground and space-based early warning (EW) systems. It will acquire, track, discriminate, destroy, and provide kill assessment of strategic ballistic missiles. The Army elements of the NMD system include the following:

- Ground-based, exo-atmospheric, hit-to-kill interceptors
- Ground-based, phased-array, X-band defense radar (XBR) (for surveillance, tracking, object classification, and kill assessment)
- Site battle management command, control, and communication (BMC3) for human-in-control, engagement planning, top-level decision making, and system communications

An NMD engagement is initiated based on the detection and designation of a hostile ballistic missile launched toward the United States. BMC3 aids the operators in identifying the reentry vehicles and planning the engagement, using data from surveillance and tracking systems, including the ground-based radar. After launch and burnout of the Ground-Based Interceptor (GBI) booster, an Exo-atmospheric Kill Vehicle (EKV) separates and repositions itself, pointing the seeker field-of-view to the predicted target position. The onboard computer receives additional target updates from the BMC3 based on surveillance data and executes intercept course correction maneuvers. Once uncapped, the on-board passive seeker searches and acquires the target and any associated objects in its field of view. The target is designated, using on-board target selection capabilities. The kill vehicle then tracks the target, executing "end-game" maneuvers to achieve a direct-impact kill. The intercept is monitored by the X-band radar and EW sensors for kill assessment or further battle management action.

FOREIGN COUNTERPART

Russia: Moscow ABM System

FOREIGN MILITARY SALES

None

PROGRAM STATUS

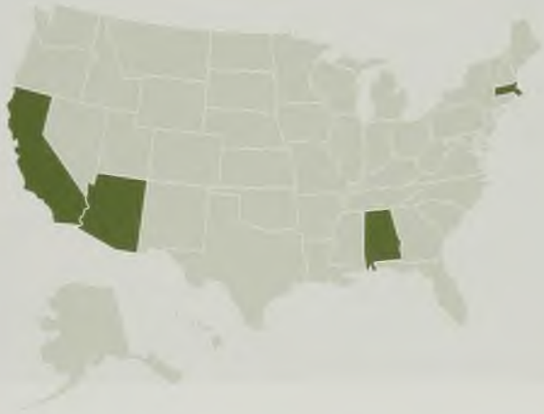
3QFY98 Awarded lead system integration contract.
4QFY98 Selected commercial off-the-shelf booster approach for GBI.
1QFY99 Selected primary EKV contractor.
3QFY97–2QFY98 Conducted two successful flight tests of EKV sensors from the U.S. Army Kwajalein Atoll (USAKA).
1QFY00 Conducted a successful integrated flight test of the EKV, launched from USAKA, resulting in an intercept of a medium re-entry vehicle launched from Vandenberg Air Force Base, California. Successfully operated the prototype GBR and portions of the BMC3 in "shadow mode" during the test.
2QFY00 Conducted second EKV intercept attempt (IFT-4).

PROJECTED ACTIVITIES

3QFY00 First integrated system test (IFT-5).
Deployment readiness review.

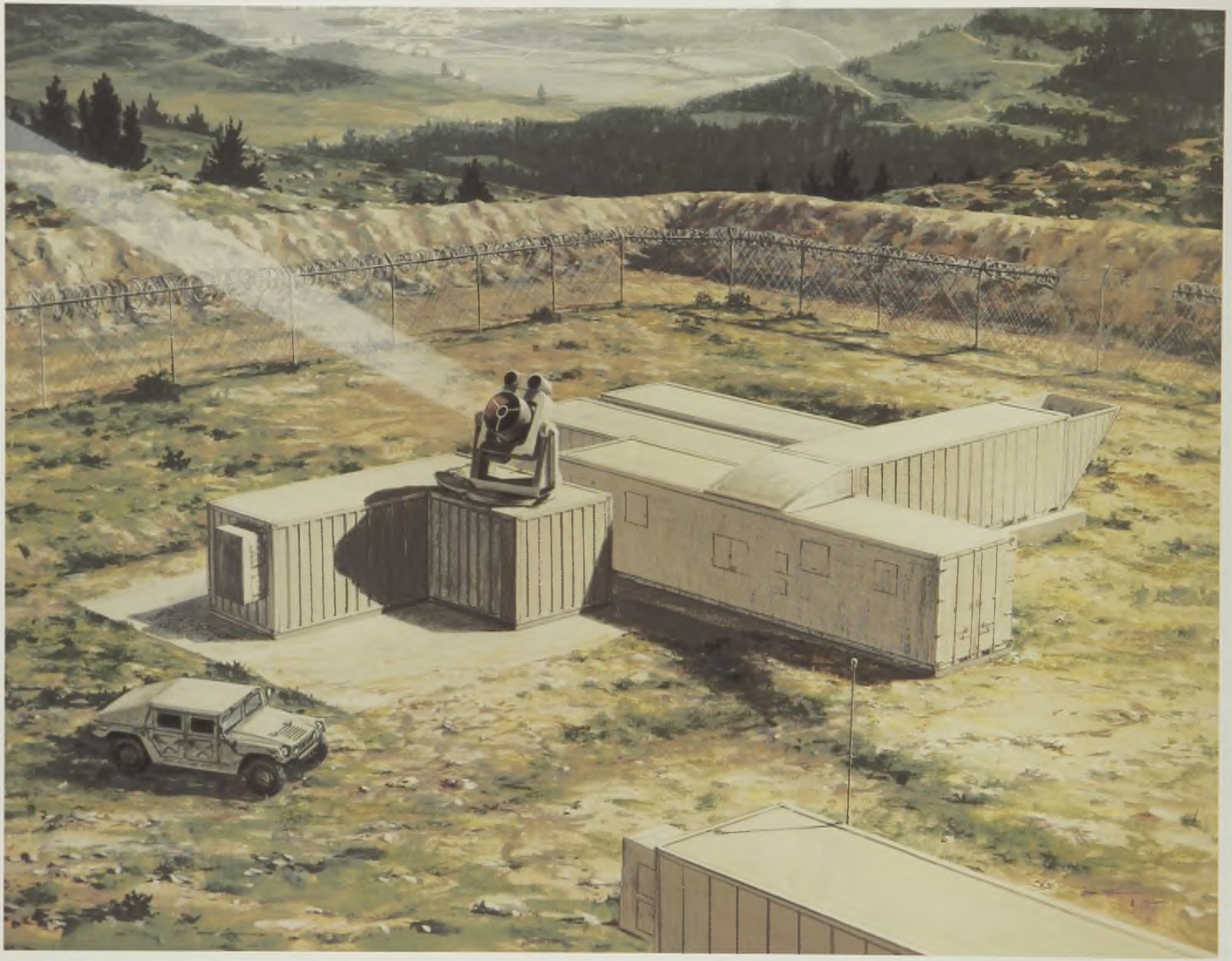
PRIME CONTRACTORS

Lead System Integrator (LSI): Boeing (Huntsville, AL)
EKV: Raytheon (Tucson, AZ)
PLV: Lockheed Martin (Sunnyvale, CA)
GBR: Raytheon (Bedford, MA)
BMC3: TRW (Huntsville, AL)



* See appendix for list of subcontractors

Tactical High Energy Laser (THEL)



UNITED STATES ARMY

Tactical High Energy Laser (THEL)

Essential R&D/Leap-Ahead Technologies

MISSION

Evaluate the effectiveness of the Tactical High Energy Laser (THEL) in negating the threat posed by Katyusha and other short-range artillery rockets; enhance defensive coverage to combat forces and theater-level assets.

DESCRIPTION AND SPECIFICATIONS

The Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD) demonstrator will enable an early operational assessment of the acquisition and close-in engagement problems associated with evolving air threats. The demonstrator consists of three major subsystems which are enclosed in standard shipping containers that are road-and-air-transportable: laser subsystem (LS), pointer tracker subsystem (PTS), and command, control, communication, and intelligence (C3I) subsystem. The LS is based on a weapon power deuterium fluoride chemical laser. The PTS is capable of providing +/-200 degree coverage in azimuth and -5 to 95 degree coverage in elevation, and is able to accept cueing from the C3I subsystem, which communicates with external sensors in existing air defense architectures. The THEL demonstrator is configured for field setup and testing at the High Energy Laser Systems Test Facility (HELSTF), White Sands Missile Range, NM, and remote locations in Israel.

The Joint Theater Air and Missile Defense Mission Needs Statement, approved by the Joint Requirements Oversight Council on July 7, 1999, states, "Current joint air and missile defense measures do not adequately protect friendly forces from the very short range missiles, rockets, mortars, and artillery threat." The THEL ACTD is a major step toward mobile laser-based weapon-system candidates most likely to provide this warfighting improvement.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None. (The THEL ACTD memorandum of agreement with Israel anticipates transfer of the demonstrator to Israel, following field testing in Israel, via a foreign military sale.)

PROGRAM STATUS

1QFY99 C3I subsystem testing completed. Demonstrated the capability to track multiple Katyusha rockets and properly classify them as ballistic targets.
June 26, 1999 The LS achieved "first light."
4QFY99 PTS demonstrated closed-loop tracking capability at TRW's subsystem integration and test facility.
1QFY00 PTS became operational at HELSTF, supporting initial tracking tests against live Katyusha rockets.
Current THEL hardware has been fabricated by TRW, and has entered the initial stages of field integration and testing. The C3I subsystem, including an Israeli-furnished radar, has been tested in Israel and HELSTF.

Began field integration and testing activities at HELSTF. Before leaving TRW's subsystem integration and test facility at Capistrano, CA, the LS demonstrated near full power. The THEL demonstrator will be fully integrated for the first time at HELSTF to support the initiation of system testing against live fire Katyusha rockets in early FY00. Began system integration and functional testing at WSMR.

PROJECTED ACTIVITIES

4QFY00 Field testing at HELSTF scheduled for completion; transportable THEL weapon system to be shipped to Israel.

PRIME CONTRACTORS

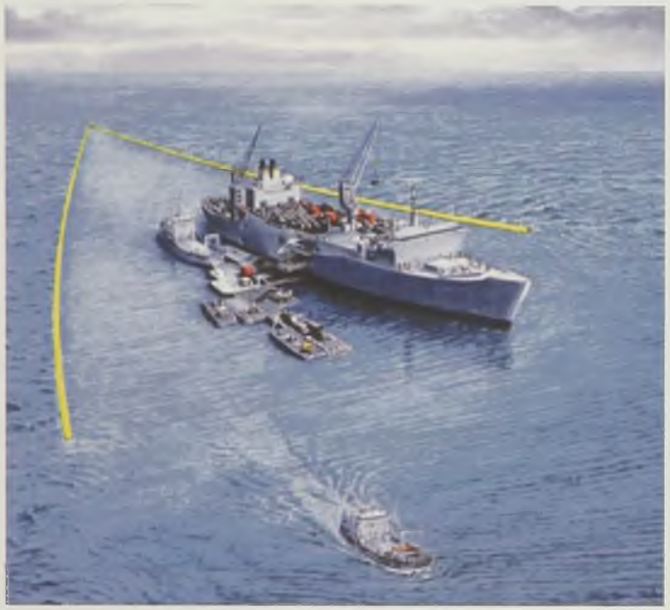
TRW (Redondo Beach, CA)

* See appendix for list of subcontractors

Protect the Force

Enhanced Coastal Trafficability and Sea State Mitigation (ECT/SSM) Advanced Technology Demonstration (ATD) (2000–2002)

This ATD is a critical component of the Department of Defense (DoD) effort to meet CINC requirements for a robust Sea State 3 logistics-over-the-shore (LOTS) capability. The ECT/SSM ATD will demonstrate the impact of recently developed technology for joint logistics-over-the-shore (JLOTS) operations. It includes:



- A rapidly installed breakwater (RIB) that enables Sea State 3 operability at offshore anchorages used during JLOTS operations; and
- A sand-fiber stabilization system, plastic hex mat, and fiberglass mat for rapid beach preparation and sustained trafficability during JLOTS operations.

A primary limit to throughput in JLOTS operations is the exchange of Army prepositioned stocks (APS) to lighters during Sea State 3 conditions. A RIB provides relatively calm areas in which these operations could be safely conducted during such conditions. The primary goals of the ATD are the following:

- Successfully deploy an ocean-scale RIB. The RIB would create a sheltered area within its lee in which Sea State 3 conditions are reduced to Sea State 2 or lower.
- Demonstrate improved techniques for rapidly stabilizing beach soils from off-load sites to inland road networks.

To accomplish this, a RIB will be deployed during a scheduled JLOTS exercise in 2002, to demonstrate the capability of the system for sea state mitigation and rapid set-up time. The impact of rapid beach stabilization technology will also be demonstrated by comparing construction times, material requirements, and the durability of existing and new capabilities.

Future Scout and Cavalry System (FSCS) Advanced Technology Demonstration (ATD) (1998–2002)

Currently, the Army has no plans to pursue FSCS beyond the ATD; however, the Army views the FSCS ATD as an important program to mature advanced technologies that can reduce risk for the Future Combat Systems (FCS) program and provide possible spin offs for the interim force.

The Future Scout and Cavalry System (FSCS) ATD is a cooperative program with the United Kingdom (U.K.) that will demonstrate the affordable application of advanced, mature multi-spectral sensor, communication, survivability, mobility, supportability, and lethality technologies to a manned, ground reconnaissance system. The FSCS and its U.K. twin, the Tactical Reconnaissance Armoured Combat Equipment Requirement (TRACER), will demonstrate the following:

- A sensor overmatch capability that will enable FSCS to detect and identify threat systems before they can detect the FSCS
- A sensor fusion and communications package that will provide clearer situational awareness and the ability to send that picture throughout the battlefield
- C17 and C130 deployability
- A survivability suite that will decrease the detectability of the FSCS and increase its ability to counter threats
- A decrease in supportability demands over current systems
- Mobility technologies to ensure greater mobility over the supported force, while decreasing the logistical burdens

The U.K. awarded two competitive ATD contracts in 2QFY99. The U.S. and the U.K. share ATD costs equally. The U.S./U.K. consortia competing during the ATD phase include the following:

Lancer. This consortium is led by GEC-Marconi as the prime contractor with Raytheon, United Defense, and Alvis as the major subcontractors.

Sika International. This consortium is a joint venture of Lockheed Martin and British Aerospace as the prime contractors, with General Dynamics Land Systems and Vickers Defence Systems in a joint venture as the major sub-contractors.

Objective Crew Served Weapon (OCSW) Advanced Technology Demonstration (ATD) (1999–2002)

The Objective Crew Served Weapon (OCSW) ATD will demonstrate the technological maturity and operational utility of a highly lethal, lightweight, two-man portable, crew-served weapon. This system will provide a full-solution, day/night, target-acquisition and fire-control system. The OCSW will significantly reduce the dismounted soldier's load by providing a greater than 60% reduction in weapon system weight, and a 75% reduction in ammunition on a lb/kill basis, compared to current crew-served weapon systems.

With its high-explosive, precision, airbursting munitions, the OCSW system will provide revolutionary overmatch lethality. It will defeat body-armor-protected threat personnel in defilade, out to a maximum effective range of two kilometers. The OCSW will defeat light and lightly armored vehicles beyond one kilometer with its armor-piercing warhead, provide a heavy machinegun capability in a medium machinegun package/role, and will also be a fully interoperable, lethality component block upgrade to the Land Warrior. In accordance with the strategy of the Army and Joint Service Small Arms Master Plans, the OCSW will provide the 21st century warfighter with dramatic improvements in

lethality, survivability, reduced soldier load, and sustainability. In addition to the impressive capabilities it affords to dismounted warriors, the OCSW also has significant potential for vehicle-mounted operation.

Recapitalization

The Army must continuously devote significant resources to ensure that its equipment remains safe to operate, can be efficiently maintained, and provides soldiers with reliable and effective systems to go to war. Recapitalization is the on-going maintenance and repair of the Army's current fleets of trucks, trailers, tracked vehicles, communications equipment, and other systems. The intent is to economically sustain current platforms, rather than develop a significant improvement in capability.

Recapitalization of existing systems is accomplished through replacement, extended service programs (ESP), pre-planned product improvements (P3I), depot rebuilds, and technology insertion. This combination of new procurement, major maintenance, and selective upgrades allows the Army to bring new systems into the force where necessary and extend the service life of older equipment. It is the baseline investment for maintaining the Army's weapon systems and allows the procurement of systems to be economically feasible.

ENGINEERING AND MANUFACTURING DEVELOPMENT:

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)

PRODUCTION, FIELDING/DEPLOYMENT, AND OPERATIONAL SUPPORT:

Black Hawk

Heavy Equipment Transporter System (HETS)

The Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

M113 Family of Vehicles (FOV)

Paladin

Palletized Load System (PLS)

Smoke Generator (M56 Coyote)

Black Hawk

UNITED STATES ARMY

MISSION
Provide utility and assault helicopter capability.

DESCRIPTION AND SPECIFICATIONS
The Black Hawk (UH-60) is a utility tactical transport helicopter that performs many missions. It is the primary helicopter for air assault, general support, and aeromedical evacuation units. Modified Black Hawks also fulfill command and control, electronic warfare, and special operations roles. The Black Hawk has enhanced the overall mobility of the Army, due to dramatic improvements in troop capacity and cargo lift capability, compared to the UH-1 "Huey" it replaces. An entire 11-person, fully equipped infantry squad can be lifted in a single Black Hawk, transported faster than in predecessor systems, and transported in most weather conditions. The Black Hawk can reposition a 105 mm howitzer, its crew of six, and up to 30 rounds of ammunition in a single lift. The aircraft's critical components and systems are armored or redundant, and its airframe is designed to progressively crush on impact to protect the crew and passengers.

	UH-60A	UH-60L
Max gross weight:	20,250 lb	22,000 lb, 23,500 lb (external cargo)
Cruise speed:	139 kt	150 kt
Endurance:	2.3 hr	2.1 hr
Max range:	320 nm	306 nm
Crew:	2 pilots, 2 crew chiefs	2 pilots, 2 crew chiefs
Armament:	Two 7.62 mm machine guns	Two 7.62 mm machine guns
Payload:	2,640 lb (or 11 combat equipped troops)	2,640 lb (or 11 combat equipped troops)
External load:	8,000 lb	9,000 lb

FOREIGN COUNTERPART
French: Puma, NH90; Russia: HIP series aircraft; United Kingdom: Lynx, EH-101.

FOREIGN MILITARY SALES
Bahrain, Colombia, Egypt, Israel, Saudi Arabia. Commercial Sales: Argentina, Australia, Bahrain, Brazil, Brunei, China, Hong Kong, Japan, Jordan, Malaysia, Mexico, Morocco, Philippines, Taiwan, Turkey; co-production: Republic of Korea.

PROGRAM STATUS
Fielding of the UH-60 began in 1978 and continued until 1989, when the Army procured UH-60A model aircraft. Following an upgrade to the power train, the model designation changed to UH-60L in October 1989. By the end of FY99, 1,554 aircraft were procured, of which 472 were UH-60Ls. The Army is currently in the fourth year of a five-year, multi-service contract with the Navy and Air Force. Since 1991, the five services (Army, Navy, Air Force, Marines, and Coast Guard), plus Australia, have been coordinating cost reduction efforts through the joint program management group, TEAM HAWK.

PROJECTED ACTIVITIES
Current Continue aircraft delivery under the multi-year procurement contract.
FY00 Commence research, development, test and engineering effort to modernize UH-60 fleet.
FY02 Convert first UH-60A MEDEVAC aircraft to UH-60Q configuration.
FY03 Convert first UH-60A to UH-60L+ configuration.

PRIME CONTRACTORS
United Technologies (Stratford, CT)

* See appendix for list of subcontractors


Project the Force


Conduct Decisive Operations


Sustain the Force

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)

UNITED STATES ARMY

MISSION

Transport weapons, ammunition, equipment, troops, and other cargo in support of combat units and operations other than war.

DESCRIPTION AND SPECIFICATIONS

The CH-47 Chinook/Improved Cargo Helicopter (CH-47F) is an integral component of the Army Vision. The CH-47F program will remanufacture 300 of the current fleet of 431 CH-47D Chinook airframes, incorporate a new digital cockpit, and make changes to the airframe to reduce vibration. The cockpit modifications include a digital data bus that permits installation of enhanced communications and navigation equipment for improved situational awareness, mission performance, and survivability, as well as future growth potential. Airframe vibrations, which increase operational and support (O&S) costs and crew fatigue, will be reduced by structural modifications that change the natural frequency of the airframe. A separate, but complementary effort, is the installation of more powerful and reliable T55-GA-714A engines that are an upgraded version of the current T55-L-712. These engines will increase power from 3,750 to 4,777 shaft horsepower, yielding an approximate 3,900 lb improvement over current high altitude/hot day lift performance. Another feature is the deployment of an improved crashworthy extended range fuel system (ERFS II) to enable Chinook self-deployment and extend the operational radius of all other missions. A program is also underway to reduce O&S costs through the joint development with the United Kingdom of a low-maintenance rotor hub.

Max gross weight: 50,000 lb
Max cruise speed: 170 knots/184 miles per hour
Troop capacity: 33 (31 troops plus 2 crewmembers)
Litter capacity: 24
Sling-load Capacity: 26,000 lb. center hook, 17,000 lb forward/aft hook, 25,000 lb tandem
Minimum crew: 3 (pilot, co-pilot, and flight engineer)

FOREIGN COUNTERPART

Russia: MI-26; United Kingdom: EH-101

FOREIGN MILITARY SALES

Australia, Egypt, Greece, Taiwan Direct Sales: Korea, Netherlands, Singapore, Spain, and United Kingdom.

PROGRAM STATUS

CH-47F program:

3QFY98 Awarded the engineering and manufacturing development (EMD) contract, slated for completion FY02. Fielding will be completed during FY00.

T55-GA-714A Engine:

1QFY98 Commenced low-rate initial production (LRIP). First unit equipped.

2QFY00 Currently fielding for the CH-47D/MH-47D/MH-47E.

Extended Range Fuel System (ERFS):

August 28, 1998 Awarded the improved ERFS II production contract. Initial deliveries were deployed in support of operations in Kosovo.

2QFY00 ERFS received a full materiel release.

PROJECTED ACTIVITIES

CH-47F:

3QFY01 First flight (EMD).

3QFY03 First LRIP CH-47F delivery.

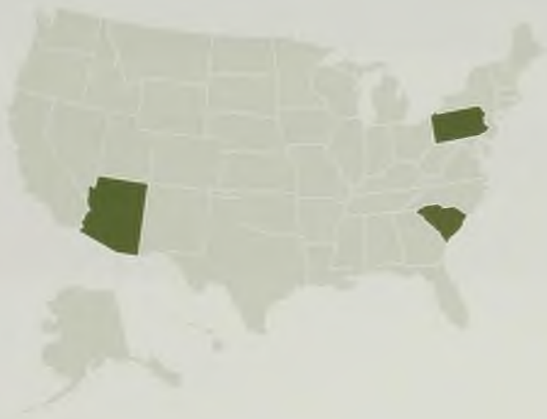
4QFY04 First unit equipped.

T55-GA-714A Engine:

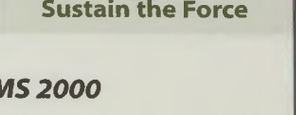
2QFY07 Helicopters slated for completion.

PRIME CONTRACTORS

Boeing (Philadelphia, PA); AlliedSignal (Greer, SC; Phoenix, AZ); Robertson Aviation (Tempe, AZ)



* See appendix for list of subcontractors



Heavy Equipment Transporter System (HETS)

UNITED STATES ARMY

MISSION
Deploys, transports, recovers, and evacuates a combat-loaded M1 series tank or other vehicles of similar weight.

DESCRIPTION AND SPECIFICATIONS
The Heavy Equipment Transporter System (HETS) consists of the M1070 truck tractor and M1000 semitrailer (70 ton) which are being procured under separate acquisition programs. The new HETS transports 70-ton payloads, primarily M1 series tanks. It operates on highways worldwide (with permits), secondary roads, and cross-country. The HETS has a number of features that significantly improve the mobility and overall performance of the system in a tactical environment. The M1070 tractor has front- and rear-axle steering, a central tire-inflation system, and cab space for six personnel to accommodate the two HETS operators and four tank crewmen. The M1000 semitrailer has automatically steerable axles and a load-leveling hydraulic suspension.

Speed: 40–45 mph on highway (25–30 mph with 70 ton payload)
Range: 300 mi
Transport: C-5 and C-17 aircraft
Mobility: 95% on road; 5% off road
RAM: 3,000 mean miles between hardware mission failure for both tractor and trailer

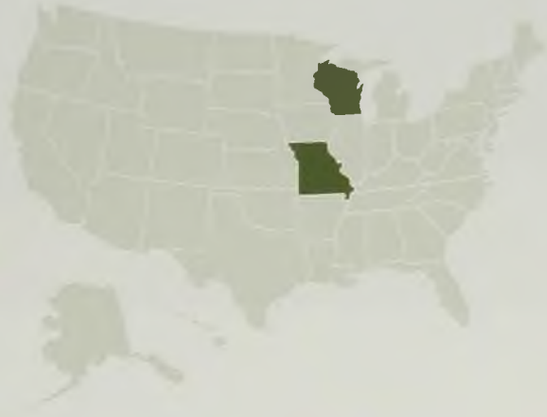
FOREIGN COUNTERPART
Czech Republic: TATRA T-816 Tractor; Germany: Daimler-Benz Actros Tractor, Mercedes-Benz Type 2648S Tractor, M.A.N. Tractor, Kogel ST 70-93 Semi-trailer; Italy: IVECO Tractor; France: Lohr SMC 60 DT Semi-trailer; Russia: Volat Tractor, ChMZAP-9990 Semi-trailer; Spain: Kynos ALJABA Tractor and Semi-trailer; United Kingdom: Alvis Unipower MH8875 Tractor with TST 70MD6/2 Semi-trailer, King GTS100/6S-19.5 Semi-trailer.

FOREIGN MILITARY SALES
Israel has purchased 37 trailers. The approved configuration will vary from the U.S. version.

PROGRAM STATUS
Approximately 1,792 systems have been fielded as of 1QFY00. Efforts are underway to insert commercial technology enhancements into the tractor, improve reliability, maintainability and safety; and meet current Environmental Protection Agency/ Department of Transportation laws. The results will be used to update performance specifications for new procurement.

PROJECTED ACTIVITIES
- Draft solicitation to be published, based on competitive solicitation in FY00.
- Future fieldings slated for newly activating cargo transfer and National Guard transportation companies, as well as prepo-afloat (shipboard war-reserve) stocks.

PRIME CONTRACTORS
Tractor: Oshkosh Truck (Oshkosh, WI)
Trailer: Systems & Electronics (St. Louis, MO)



* See appendix for list of subcontractors

Conduct Decisive Operations

Sustain the Force

Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)

UNITED STATES ARMY

MISSION
Perform line haul, local haul, unit resupply, and other missions in the tactical environment to support modernized and highly mobile combat units.

DESCRIPTION AND SPECIFICATIONS
The Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS) will significantly increase CSS units' ability to satisfy Battlefield Distribution (BD) mobility requirements. There is no other Army vehicle in the 11-ton payload range, which is C-130 transportable, with this potential. The HEMTT-LHS will be assigned to Forward Support Companies (FSC) and to Base Support Companies (BSC) of the Forward Support Battalions (FSB) inside the Digitized Heavy Division. The HEMTT-LHS will also improve throughput interface between the Corps Palletized Load System (PLS) and the CSA/DSA. This reconfiguration establishes the HEMTT-LHS as a vital link in the Brigade Combat Teams Battlefield Distribution network. The HEMTT-LHS consists of a standard M977/M978 or M985 HEMTT chassis equipped with an LHS. The LHS is capable of loading/off-loading demountable cargo beds (flatracks) and 8 x 8 x 20 foot ISO containers or shelters. The HEMTT flatracks are interchangeable with the PLS flatracks. The HEMTT-LHS is capable of transporting an 11 ton payload on the mounted flatrack or in the ISO container, while towing an M1076 trailer loaded with an additional 11 tons.

The HEMTT-LHS is C-130 transportable.

Truck payload: 11 ton
Engine type: Diesel
Transmission: Automatic
Number of driven wheels: 8
Range: 255 mi

FOREIGN COUNTERPART
No known foreign counterpart.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
New procurement for the family of heavy tactical vehicles (includes PLS and HEMTT).

PROJECTED ACTIVITIES
FY05 Continue fielding of new as well as enhanced service life vehicles.

PRIME CONTRACTORS
Truck: Oshkosh Truck (Oshkosh,WI)

* See appendix for list of subcontractors

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

UNITED STATES ARMY

MISSION
Provide a common light tactical vehicle capability.

DESCRIPTION AND SPECIFICATIONS
The High Mobility Multipurpose Wheeled Vehicle (HMMWV) is a light, highly mobile, diesel-powered, four-wheel-drive vehicle that uses a common 4,400 lb payload chassis. Using common components and kits, the HMMWV can be configured to become a troop carrier, armament carrier, S250 shelter carrier, ambulance, TOW missile carrier, and a Scout vehicle. The 4,400 lb variant was developed as the prime mover for the light howitzer, towed VULCAN system, and heavier shelter carriers. It is a tri-service program that also provides vehicles to satisfy Marine Corps and Air Force requirements. The HMMWV replaced the .25 ton jeep, the M718A1 ambulance, .5 ton mule, 1.25 ton Gamma Goat, and M792 ambulance. Since its inception, the HMMWV has undergone numerous design and configuration updates and changes. These changes have included technological, environmental, operational, and safety improvements, such as higher payload capability, radial tires, 1994 Environmental Protection Agency emissions update, commercial bucket seats, three-point seat belts, four-speed transmissions, and, in some cases, turbo-charged engines and air conditioning. In response to peacekeeping missions, an up-armored HMMWV was developed to provide increased ballistic and blast protection, primarily for the Military Police (MP). In addition, the Project Manager (PM) developed a Scout HMMWV that is configured with a night vision device, a global positioning system, gun mounts, and Single Channel Ground and Airborne Radio Systems (SINCGARS).

In 1995, the PM introduced the A2 configuration and the expanded capacity vehicle (ECV) HMMWV. The A2 incorporates the four-speed, electronic transmission; the 6.5 liter diesel engine; and improvements in transportability. The A2 serves as a platform for other Army systems such as the ground-based common sensor. The ECV vehicle also went into production in 1995. The payload of this vehicle is 5,100 lb, including the crew. One of its missions is to serve as a chassis for the M1114 up-armored HMMWV that is used by the Scouts and MPs. The ECV also serves as a platform for mission payloads and for systems that exceed 4,400 lb.

FOREIGN COUNTERPART
Certain models of the HMMWV have counterparts such as the Swiss MOWAG, the French PANHARD, and the German UNIMOG.

FOREIGN MILITARY SALES
Argentina, Bahrain, Bolivia, Chad, Columbia, Djibouti, Ecuador, Egypt, Ethiopia, Honduras, Israel, Kuwait, Luxembourg, Mexico, Oman, Philippines, Saudi Arabia, Sudan, Taiwan, Tanzania, Tunisia, and Uganda.

PROGRAM STATUS
2QFY99 Completed analysis of alternatives, the basis of the HMMWV spiral modernization strategy through FY23.
FY00 Continue production under a five-year requirements contract. Current production supports Army, Air Force, Marine Corps, and foreign military sales requirements.

PROJECTED ACTIVITIES
- Award contract for development of the A4 block upgrade.
- Award contract for follow-on production.
- Award contract for development of the recapitalization program.

PRIME CONTRACTORS
AM General (South Bend, IN)

* See appendix for list of subcontractors

M113 Family of Vehicles (FOV)

UNITED STATES ARMY

MISSION
Provide a highly mobile, survivable, and reliable tracked vehicle platform.

DESCRIPTION AND SPECIFICATIONS
The M113 Family of Vehicles (FOV) is designed to maintain pace with Abrams and Bradley-equipped units and to adapt to a wide range of current and future battlefield tasks through the integration of specialized mission modules at minimum operational and support cost. The M113A3 FOV has the following specifications:

Length: 17.3 ft
Width: 8.8 ft with track shrouds
Height: 8.2 ft
Weight: 27,150 lb combat loaded
Power train: 275 hp, 6V53T Detroit Diesel engine with Allison X200-4A hydrokinetic, automatic transmission
Cruising range: 300 mi
Road speed: 41 mph
Crew: variable (maximum of 13)
Armament: 50 caliber, M2A2 heavy machine gun
Distribution: Corps-Company
Current models: M58 Mechanized Smoke Obscurant System, M548A1/A3 Cargo Carrier, M577A2/A3 Command Post Carrier, M901A1 Improved TOW Vehicle, M981 Fire Support Team Vehicle, M1059/A3 Smoke Generator Carrier, M1064/A3 Mortar Carrier, M1068/A3 Standard Integrated Command Post System Carrier, OPFOR Surrogate Vehicle (OSV).

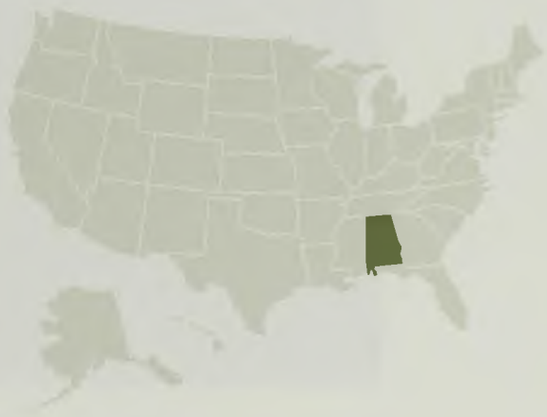
FOREIGN COUNTERPART
China: Type 577, Type YW-534; Commonwealth of Independent States: BTR-50P, MTLB; France: AMX VCI; United Kingdom: FV-432, FV-4333

FOREIGN MILITARY SALES
Argentina, Australia, Bahrain, Brazil, Botswana, Cambodia, Canada, Columbia, Denmark, Egypt, Germany, Greece, Iran, Israel, Italy, Jordan, Korea, Kuwait, Lebanon, Morocco, Norway, Pakistan, Peru, Philippines, Portugal, Saudi Arabia, Spain, Taiwan, Thailand, Turkey, and Yemen.

PROGRAM STATUS
In FY99, the M113 FOV Product Manager (PM) continued the procurement and application of upgrade kits Government furnished material for the conversion of older M113 variants to new configurations. A total of 230 vehicles were upgraded including M113A2 to M113A3, M577A2 to M1068A3 SICPS, M113A2 to M58, and M901A1 to OPFOR Surrogate Vehicle (OSV).

PROJECTED ACTIVITIES
- Complete upgrade of all remaining M113A2 variants in Force Package 1-4 to the A3 configuration.
- Continue to incorporate new features to sustain the effectiveness and relevance of the FOV, especially in support of Force XXI and the Army After Next.

PRIME CONTRACTORS
Anniston Army Depot (ANAD) (Anniston, AL); United Defense, L.P. (Anniston, AL)



* See appendix for list of subcontractors

Paladin

UNITED STATES ARMY

MISSION
Provide the primary artillery support for armored and mechanized infantry divisions. The "A6" designation of the M109A6 Paladin Self-Propelled Howitzer identifies the vast improvements to weapon survivability, responsiveness, reliability, availability and maintainability, armament, and terminal effects over the standard model.

DESCRIPTION AND SPECIFICATIONS
The M109A6 (Paladin) Howitzer is the most technologically advanced self-propelled cannon system in the U.S. Army. The fire control system is fully automated, providing accurate position location, azimuth reference, and on-board ballistic solutions of fire missions. The howitzer has a computer-controlled gun driven through servos with manual backup. Paladin uses state-of-the-art components to achieve dramatic improvements in the following:

Survivability: "Shoot and Scoot" tactics; improved ballistic and NBC protection.
Responsive fires: capable of firing within 45 seconds from a complete stop with on-board communications, remote travel lock, and automated cannon slew capability.
Accurate fires: on-board position navigation and technical fire control.
Extended range: 30 km with High Explosive Rocket Assisted Projectile (HE RAP) and M203 propellant.
Increased reliability: improved engine, track, and diagnostics

Upgrades include GPS-aided self-location, M93 Muzzle Velocity System, and commercial off-the-shelf based computer processor.

Max unassisted range: 22,000 m
Max assisted range: 30,000 m
Min range: 4000 m
Max rate of fire: 4 rds/min
Sustained rate of fire: 1 rd/min (dependent on thermal warning device)
Max speed: 38 mph (61.1 Kph)(highway)
Crew size: 4 (accompanying M992 FAASV-5)
Weight empty (approx.): 56,400 lb (25,605.6 Kg)
Weight combat-loaded (approx.): 63,615 lb (28,881.21 Kg)

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
DA approved the required operational capability on 25 May 1988 and Howitzer improvement program system MANPRINT management plan 11 April 1989. First unit equipped was in FY93. Completed fielding to Active Army, currently fielding the remaining 18 U.S. Army National Guard battalions, to be completed by FY01. Completed Paladin production on 25 June 99; completed AFCS XXI upgrade program; and began Version 11 system modernization program. Fielded to six Army National Guard battalions.

PROJECTED ACTIVITIES
- Award Paladin Enhanced Display Unit contract in support of the first digitized division.
- Complete Version 11 system modernization program.
- Field to six Army National Guard battalions.

PRIME CONTRACTORS
United Defense, L.P. (York, PA)

* See appendix for list of subcontractors


Protect the Force


Shape the Battlespace


Conduct Decisive Operations

Palletized Load System (PLS)

UNITED STATES ARMY

MISSION
Perform line haul,local haul,unit resupply,and other missions in the tactical environment to support modernized and highly mobile combat units.

DESCRIPTION AND SPECIFICATIONS
The Palletized Load System (PLS) is being deployed as the primary component of the maneuver-oriented ammunition distribution system (MOADS). The PLS consists of a 16.5 ton payload prime mover (10 x 10) with an integral load-handling system, providing self-load/unload capability; a 16.5 ton payload trailer; and demountable cargo beds, referred to as flatracks. The PLS truck is equipped with the central tire inflation system, which significantly improves off-road mobility. It maintains interoperability with comparable British,German,and French systems through the use of a common flatrack, as specified in the current quadripartite agreement. Based on congressional direction, an intermodal flatrack (with features that enhance transportability and stacking) has completed production (5,000 M1 flatracks).

The Containerized Roll-in/out Platform (CROP) is an A-frame type flatrack, which fits inside a twenty-foot International Standards Organization (ISO) container. A Container Handling Unit (CHU) will also be fielded to PLS trucks assigned to transportation and ammunition units and to forward support battalions. This enables the PLS to pick up and transport twenty-foot ISO containers without using a flatrack.The self-propelled field artillery units will receive PLS trucks equipped with a materiel-handling crane to deal with individual pallets of ammunition. The PLS-Enhanced (PLS-E) Program, now known as the Movement Tracking System (MTS), provides the PLS with GPS capability and two-way digital messaging. The MTS allows the commander to track logistics assets over the range of the Battlespace. The two-way messaging allows redirection of logistics assets as needs develop.

Truck payload: 16.5 ton
Trailer payload: 16.5 ton
Flatrack dimensions: 8 x 20 ft
Engine type: Diesel
Transmission: Automatic
Number of driven wheels: 10
Range: 255 mi

FOREIGN COUNTERPART
United Kingdom: Demountable Rack Off-Loading and Pick-Up System

FOREIGN MILITARY SALES
None

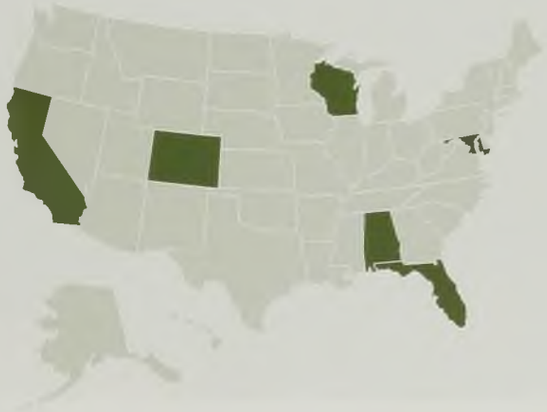
PROGRAM STATUS
4QFY99 Approximately 3,076 PLS trucks, 1,791 PLS trailers, and 15,633 flatracks have been fielded. Alternate missions currently under development or in initial production include the following:

- Engineer mission modules for combat engineers (dump body, bituminous distributor, and concrete mobile)
- Petroleum distribution support (3,000–3,500 gallon fuel racks for retail supply, THAAD missile system and quartermaster fuel farm)

2QFY00 New procurement for the family of heavy vehicles (includes PLS and HEMTT).

PROJECTED ACTIVITIES
Through FY05 Continue fielding of PLS trucks and trailers.

PRIME CONTRACTORS
Truck and CHU: Oshkosh Truck (Oshkosh, WI)
Trailer: Oshkosh Truck (Bradenton, FL)
CROP: Summa Technologies (Huntsville, AL); Hyundai Precision America (San Diego, CA)
Movement Tracking System: COMTECH (Germantown, MD)



* See appendix for list of subcontractors

Sustain the Force

Smoke Generator (M56 Coyote)

UNITED STATES ARMY

MISSION
Deny the enemy information, protect our forces, and dominate the maneuver battle by generating large-area obscuration in the visual-through-infrared regions of the electro-magnetic spectrum.

DESCRIPTION AND SPECIFICATIONS
The Mechanical Smoke Generator (M56) is a large-area smoke generator system that is mounted on the M1113 High Mobility Multipurpose Wheeled Vehicle (HMMWV.) The M56 can obscure high-priority stationary targets such as airfields, bridges, and ammunition depots, as well as mobile targets such as convoys and troop movements. The system is modular and uses a gas turbine engine as a power source to disseminate the obscurants. The visual screening module is capable of vaporizing fog oil for up to 90 minutes. Dissemination of a particulate material is provided for 30 minutes to blind infrared sensors.

Turbine engine-powered visual screening (fog oil): 0–1.33 gallons per minute
Infrared screening (graphite): 1–10 lb per minute

FOREIGN COUNTERPART
Countries that use former Soviet doctrine emphasize extensive use of obscurants during tactical exercises. Many nations, especially those in the Middle East, are beginning developmental programs in this area.

FOREIGN MILITARY SALES
Taiwan will purchase M56 Smoke Generator Systems in FY00

PROGRAM STATUS
4QFY94 Type-classified M56 as standard.
FY95 Commenced production.
1QFY99 First unit equipped at Ft. Bragg.
4QFY99 Finished fielding 25% of the Army's required M56 Smoke Generator Systems.

PROJECTED ACTIVITIES
FY00 Complete fielding of all systems procured between FY95 and FY99.
FY00 Complete initial multi-year procurement contract.
FY01 Award new contract to continue M56 production. Commence retrofitting driver's vision enhancer to fielded systems.
FY01–04 Conduct millimeter wave obscurant preplanned product improvement development effort, followed by production and integration.

PRIME CONTRACTORS
General Dynamics (Westminster, MD)

* See appendix for list of subcontractors

Contributing Capabilities

Contributing Capabilities are programs that directly contribute to one or more of the Army's patterns of operation as identified in *Army Vision 2010*, but which are not specifically identified in other investment components. These systems improve the mobility and lethality of Army forces, enhancing their ability to dominate future battlefields.

CONCEPT EXPLORATION:

Medical R&D

National Automotive Center

National Rotorcraft Technology Center

Corps of Engineers R&D

PRODUCTION, FIELDING/ DEPLOYMENT, AND OPERATIONAL SUPPORT:

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)

Deployable Medical Systems (DEPMEDS)

Family of Medium Tactical Vehicles (FMTV)

Force Provider (FP)

Forward Repair System (FRS) (WRAP Candidate)

Reverse Osmosis Water Purification Unit (ROWPU)

Soldier Support Systems

Ultra Lightweight Camouflage Net Systems (ULCANS)

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)

MISSION

Provide biological defense vaccines for protection of U.S. forces against the use of biological warfare (BW) agents (bacteria, toxins, and viruses) that will meet regulatory requirements for Food and Drug Administration (FDA) licensure.

DESCRIPTION AND SPECIFICATIONS

Biological Defense vaccines will provide protection against aerosol-delivered biological warfare agents. Immunization provides U.S. forces with additional protection, allowing commanders to continue operations in areas with known biological threats. The Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP) is responsible for transferring biological defense vaccines from research laboratories to the prime systems contractor for development, testing, FDA licensure and production of vaccines.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

1QFY98 Awarded cost-plus-award-fee prime system contract to DynPort LLC as the prime system contractor.
2QFY99 MS0, Venezuelan Equine Encephalitis (VEE) vaccine.
1–2QFY00 Conducted manufacturing risk reduction studies, vaccine Phase 2a clinical trial, Vaccinia Immune Globulin (VIG) Intravenous (IV) consistency lot manufacture and Phase 2b clinical trial, vaccine and VIG assay validation for Vaccinia (Smallpox) Vaccine.

PROJECTED ACTIVITIES

FY00 Current good manufacturing practice (CGMP) pilot lot production and testing of VEE IA vaccine.
FY00–01 Continue developmental work for consistency model and surrogate model of Tularemia vaccine.
FY03 Continue advanced development of Q-Fever vaccine with FDA licensure, Milestone III and full-scale production of Q-Fever Vaccine.
Ongoing Complete pivotal clinical study and begin follow-on booster study for Pentavalent Toxoid (PBT), identify potential manufacturer of Botulinum Vaccines.

PRIME CONTRACTORS

DynPort, LLC (Reston, VA)

* See appendix for list of subcontractors

Protect the Force

Deployable Medical Systems (DEPMEDS)

MISSION
Provide world-class healthcare through deployable hospitals with standard state-of-the-art medical care equipment.

DESCRIPTION AND SPECIFICATIONS
The Deployable Medical System (DEPMEDS) is comprised of medical equipment packaged into standardized modules for use by all services. There are three configurations of deployable hospitals under the Army's Medical Force 2000 reorganization: combat support hospitals, field hospitals, and general hospitals. Each is comprised of different standard DEPMEDS modules, such as operating rooms, laboratories, x-ray units, and patient wards.

DEPMEDS hospital sets standardize the use, throughout the Army and DoD, of the latest medical technology and equipment, expendable supplies, major non-medical support, tent-extendable modular personnel (TEMPER), tactical shelters, heating and air conditioning, and water distribution and waste water collection systems. DEPMEDS are the Army's combat health support. They are maintainable and relocatable, have modular configuration and quad-service compatibility, and are transportable by strategic air.

DEPMEDS hospital sets can be deployed under a full range of environmental conditions and achieve advances in equipping the Total Army. The total package fielding of DEPMEDS, initiated in 1987, was the largest fielding effort ever undertaken by the U.S. Army Medical Department. Sustainment and modernization occurs continuously to ensure that state-of-the-art health care capability is available to our warfighters. The Joint Readiness Clinical Advisory Board (Joint Service) ensures compatibility among the services. Ongoing equipment acquisition strategies correct battlefield deficiencies, both clinical and technical, identified by Army hospital commanders, and contribute to lessons learned.

FOREIGN COUNTERPART
No known foreign counterpart

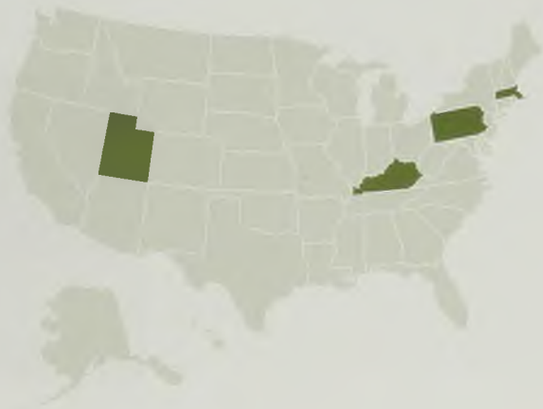
FOREIGN MILITARY SALES
Six mobile Army surgical hospitals (MASH) units were sold to Saudi Arabia during Operation Desert Storm.

PROGRAM STATUS
FY87–96 Conduct fielding.

PROJECTED ACTIVITIES
Current Force XXI Medical Reengineering Initiative hospitals are being studied to reconfigure DEPMEDS hospitals in 84 and 164 bed slices by a combination of conversion and modernization. Additionally, incremental digitization of radiology and communication capabilities is ongoing for the Army Medical Department field medical force structure.

PRIME CONTRACTORS
Defense Service Center (Philadelphia, PA); Keco Industries (Florence, KY); North American Drager (Teleford, PA); Soldier System Support (Natick, MA)

Components are assembled into modules and hospital sets by the Defense Logistics Agency Defense Depot (Ogden, UT).



* See appendix for list of subcontractors

Sustain the Force

Family of Medium Tactical Vehicles (FMTV)

UNITED STATES ARMY

MISSION
Fill the Army's medium tactical-wheeled vehicle requirements.

DESCRIPTION AND SPECIFICATIONS
The Family of Medium Tactical Vehicles (FMTV) consists of a common truck chassis that is used for several vehicle configurations in two payload classes and two tactical trailers with complementary payloads. The Light Medium Tactical Vehicle (LMTV) is available in van and cargo variants and has a 2.5-ton payload capacity. The Medium Tactical Vehicle (MTV) has a five-ton payload capacity and consists of the following models: cargo (with and without materiel-handling equipment), tractor, wrecker, and dump truck. Units equipped with FMTVs include those at Ft. Campbell, KY; Ft. Drum, NY; Ft. Stewart, GA; Ft. Huachuca, AZ; Ft. Hood, TX; Ft. Lewis, WA; Hawaii; and Korea.

Van and tanker variants of the MTV will be developed concurrent with the production of other models. The FMTV will perform line haul, local haul, unit mobility, unit resupply, and other missions in combat, combat support, and combat service support units. Vehicles will operate worldwide on primary and secondary roads and trails. The FMTV will replace over-aged and maintenance-intensive trucks currently in the medium tactical vehicle fleet.

The Army has awarded a new four-year, multi-year plus option year contract with Stewart and Stevenson (S&S), beginning with FY98 requirements. This new contract is for the "A1" version of the FMTV, which includes a 1998 Environmental Protection Agency-certified engine, upgraded transmission, electronic data bus, an anti-lock brake system and interactive electronic technical manuals. To be built are the new FMTV 2.5- and five-ton tactical trailers that have the same cube and payload capacity as their prime mover.

	LMTV "A1" Cargo	MTV "A1" Cargo
Payload:	5,000 lb	10,000 lb
Towed load:	12,000 lb	21,000 lb
Engine:	JP8 fuel	JP8 fuel
Transmission:	Automatic	Automatic
Horsepower:	275	330
Drive:	4x4	6x6

FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
Saudi Arabia, Egypt, and Thailand have foreign military sale actions in progress.

PROGRAM STATUS
2QFY96 First unit equipped at Ft Bragg, NC.
FY99 Completed fielding under the first contract with S&S Services.
CY99 Completed production verification testing of the "A1" version of the FMTV. This version includes the improved components that made up the drive line fix validated by previous testing.

PROJECTED ACTIVITIES
- Fielding will continue to the Army's highest priority "first-to-fight" units.
- The Army recently awarded the phase I, pre-production FMTV second source contracts to Oshkosh Truck Corporation and AM General Corporation. Each contractor will build three A1 trucks to compete in a run-off competition.

PRIME CONTRACTORS
Stewart and Stevenson Services (Houston, TX)

* See appendix for list of subcontractors

Project the Force

Protect the Force

Gain Information Dominance

Shape the Battlespace

Conduct Decisive Operations

Sustain the Force

Force Provider (FP)

MISSION
Provide base camp life support for soldiers in theater of operations with limited infrastructure rest and refit, intermediate staging base operations, theater reception/redeployment support missions, base camps, humanitarian aid, disaster relief, peacekeeping, and enforcement missions.

DESCRIPTION AND SPECIFICATIONS
The basic building block for the Force Provider (FP) system is the tent extendable modular personnel (TEMPER) tent complete with environmental control units. The FP modular unit is designed to support 550 soldiers. The modular design can support battalion to brigade size (or larger) units operating in all climate types. With the addition of a cold weather kit, FP is deployable in temperatures of -50 degrees Fahrenheit. FP comes complete with water storage and distribution and wastewater storage and disposal systems.

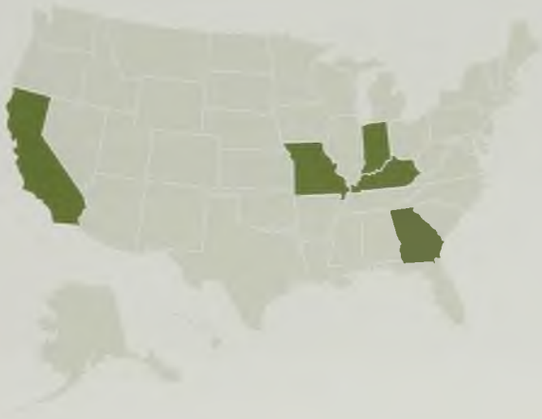
FOREIGN COUNTERPART
No known foreign counterpart

FOREIGN MILITARY SALES
None

PROGRAM STATUS
Current Six modules are prepositioned afloat the U.S. Navy Ship Gordon. The six modules deployed in support of Operation Joint Endeavor are in refurbishment status in Defense Depot, Albany, GA. Three modules are stored in Luxembourg at Combat Equipment Group-Europe. One training module is located at Fort Polk, LA. Five modules are stored at Sierra Army Depot, Herlong, CA.
1QFY00 Began delivery of four modules and one cold weather kit.

PROJECTED ACTIVITIES
1QFY01 Begin delivery of three modules and one cold weather kit.

PRIME CONTRACTORS
Anchor Industries (Evansville, IN); Defense Distribution Depot (Albany, GA); Keco Industries (Florence, KY)



* See appendix for list of subcontractors

Sustain the Force

Forward Repair System (FRS) (WRAP Candidate)

Forward Repair System (FRS) (WRAP Candidate)

Contributing Capabilities

MISSION

Provide a forward, mobile maintenance/repair vehicle to return heavy force systems to an operational condition.

DESCRIPTION AND SPECIFICATIONS

The Forward Repair System (FRS) is a "must-have" enabler for Force XXI and is a new start in FY00. The FRS is a high-mobility, forward maintenance system that reduces man hours for maintenance personnel, enabling conversion to the Force XXI design. The FRS will minimize the current practice of using recovery vehicles—the five-ton wrecker and the M88—for maintenance lift (e.g., removing engines), and replace the M113A2/A3 armored personnel carrier for transporting maintenance equipment. The current practice causes a severe shortage of recovery assets. Force XXI, with its expanded battlespace, only increases the need for dedicated recovery assets.

The FRS consists of a Palletized Load System (PLS) truck for mobility. It is overhead-lift capable, and it has a mission module that contains the tools, diagnostic equipment, and repair parts needed to return heavy force systems to battle or into a self-recovery mode. The emphasis in developing the system is on procuring non-developmental components.

FOREIGN COUNTERPART

No known foreign counterpart

FOREIGN MILITARY SALES

None

PROGRAM STATUS

3QFY99 Five FRSs were delivered for the start of developmental testing. Developmental testing has been completed.
Current Rock Island Arsenal (RIA) is producing the mission modules. PM HTV will issue PLS trucks from ongoing production. This accelerates the fielding of FRS by one year.

PROJECTED ACTIVITIES

4QFY00 Field 16 systems to 4th Infantry Division for the first digitized division (three systems to be fielded to the school houses for training use, one system to RIA for product improvement testing).
FY01 PLS trucks diverted to FRS in FY00 paid back to RIA.

PRIME CONTRACTORS

Mission Modules: Rock Island Arsenal (Rock Island, IL);
PLS: Oshkosh Truck (Oshkosh, WI)

* See appendix for list of subcontractors

Reverse Osmosis Water Purification Unit (ROWPU)

UNITED STATES ARMY

MISSION
Provide potable water from any water source.

DESCRIPTION AND SPECIFICATIONS
The 3000-gallon per hour (gph) Reverse Osmosis Water Purification Unit (ROWPU) is the Army's primary water purifier at the echelon-above-corps level. The 3000 gph ROWPU will treat fresh, brackish, and seawater sources, as well as nuclear, biological, and chemical (NBC)-contaminated waters. The system is housed in 8 x 8 x 20 ft ISO containers, and mounted on an M871A2 trailer. It is hauled by an M932 truck, and is C-130 and C-141 air transportable. It is also marine-, rail-, and highway-transportable. The 3000 gph ROWPU can operate throughout the entire range of climates as defined in AR 70-38. The system can be set up by three soldiers and operated by one soldier.

The unit employs state-of-the-art reverse osmosis (RO) technology and can produce 3000 gph from a freshwater source and 2000 gph from a seawater source. The water produced meets tri-service drinking water standards. The Office of the Surgeon General has recommended RO technology as the preferred method of protecting the soldier from waterborne diseases. The 3000 gph ROWPU treatment consists of chemical addition, multimedia, and cartridge filtration, for removal of suspended solids; followed by RO treatment for removal of dissolved salts, metals, and organics. In cases of suspected NBC-source-water contamination, post-treatment using granular-activated carbon and ion exchange can be conducted. The system is powered by a 60 kW generator set.

FOREIGN COUNTERPART
Canada: ADROWPU

FOREIGN MILITARY SALES
None

PROGRAM STATUS
The ROWPU is in production.

PROJECTED ACTIVITIES
Continue fielding.

PRIME CONTRACTORS
Keco Industries (Florence, KY)

* See appendix for list of subcontractors

Sustain the Force

Soldier Support Systems

MISSION
Support the soldier in an operational and tactical environment.

DESCRIPTION AND SPECIFICATIONS
Airdrop programs support increased strategic payloads, operational flexibility, improved safety, and improved accuracy/reliability of airdrop equipment. The Dual Row Airdrop System (DRAS) enables use of the C-17 dual logistic rails, and significantly reduces the number of C-17s required. The Advanced Tactical Parachute System (ATPS) provides a superior mass-tactical assault parachute system, reducing the rate of descent, and parachute landing injuries.

Shelter programs support maintenance facilities (ground vehicles/aircraft), tactical billeting, command and control operations, storage, and medical treatment facilities. Examples include: the family of cargo bed covers (CBC), lightweight maintenance enclosure (LME) and the modular general purpose tent system (MGPTS). CBCs provide a securable, low-cost, lightweight protective storage enclosure, compatible with a variety of tactical wheeled vehicles/trailers. The LME is a lightweight, quick set-up/strike shelter assembly enabling field units to conduct tactical vehicle maintenance operations in all conditions. The MGPTS is a modular, pole-supported tent, that can be extended in 18-foot increments by adding standard fabric modules.

Field feeding/field service programs provide essential life support to soldiers in austere field environments Examples include: the containerized kitchen (CK), advanced food sanitation center (AFSC), modern burner unit (MBU), laundry advanced system (LADS), and new family of space heaters (FOSH). The CK provides a flexible, rapidly deployable, efficient, field kitchen capable of supporting up to 550 soldiers with three hot meals/day. The AFSC provides improved safety and efficiency/effectiveness in field food sanitation. The LADS replaces all field service company M-85 field laundry systems on a one-for-four basis.

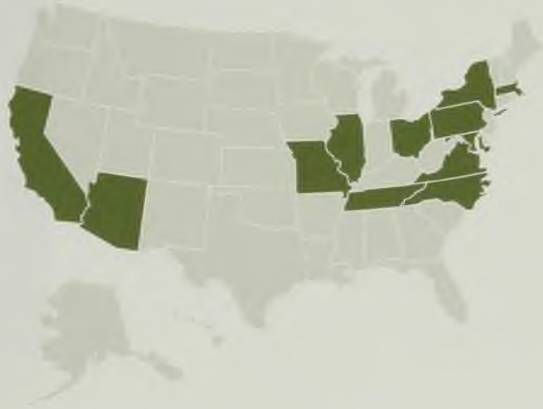
FOREIGN COUNTERPART
France: SERT trailer-mounted field kitchens; Germany: Karcher containerized field kitchen and vaporizing diesel burner.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
4QFY99 Approved LME for full material release.
1QFY00 Conducted DRAS component testing. MGPTS type-classified standard, full materiel-released. Completed CBC production verification testing. Fielded FOSH–space heater arctic.
2QFY00 CK initial operational test and evaluation testing.

PROJECTED ACTIVITIES
2QFY00–4QFY05 LADS fielding.
3QFY00 CS initial fielding.Complete AFSC production qualification testing. Award ATPS R&D contract.
4QFY00 Space heater convective to be fielded.
1QFY01 First unit equipped with CKs. Milestone III, type-classification for CBC Types III and IV. Milestone III, full-rate production decision for LME.
2QFY01 Initiate AFSC production.Complete DRAS developmental testing. Conduct market investigations for ECDS and 500 ft LVADS.
3QFY01 Complete testing and evaluation of MGPTS P3I items.
4QFY01 Conduct ATPS design validation testing.

PRIME CONTRACTORS
Simula (Phoenix, AZ); Plastics Research Corporation (Santa Fe Springs, CA); Rock Island Arsenal (Rock Island, IL); Aspen Systems (Marlboro, MA); SFA Frederick Manufacturing (Frederick, MD); Engineered Air Systems (St. Louis, MO); Eureka! (Binghamton, NY); Hunter Manufacturing (Solon, OH); Tobyhanna Army Depot (Scranton, PA); Marion Composites (Marion, VA); Camel Manufacturing Company (Caryville, TN); Irvin Industries (Hope Mills, NC); Guild Associates (Dublin, OH)



* See appendix for list of subcontractors

Sustain the Force

Ultra Lightweight Camouflage Net Systems (ULCANS)

UNITED STATES ARMY

MISSION
ULCANS enhances Force survivability by providing concealment against high technology sensors, surveillance and fire control systems, including thermal and infrared sensors, near infrared systems, and radar, as well as visual detection.

DESCRIPTION AND SPECIFICATIONS
Ultra Lightweight Camouflage Net Systems (ULCANS) represents the successful fruition of a nine year development effort to provide camouflage protection against advanced battlefield sensors while improving the Soldier-friendliness/human factors of the legacy camouflage system. Multispectral threat sensors, including night vision and thermal devices, millimeter wave radar surveillance and weapons systems, found on today's battlefields have evolved significantly since the development of the legacy camouflage system. ULCANS innovative design provides a virtually snag-proof camouflage screen, simplified interconnection system, and improved support system. ULCANS is 26% lighter, 50% faster to deploy and more durable than the legacy system it replaces. ULCANS has been fully tested and provides improved background matching, enhanced thermal and radar signature suppression, which reduces the probability of detection and provides effective concealment against advanced threats.

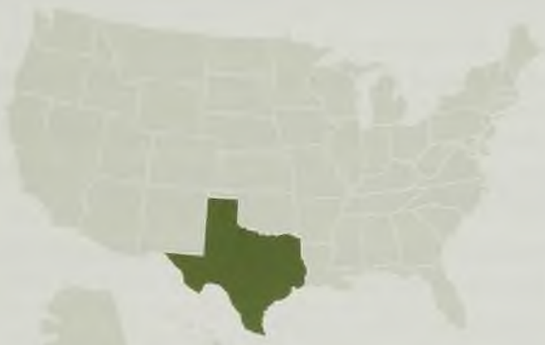
FOREIGN COUNTERPART
A number of countries possess advanced camouflage systems.

FOREIGN MILITARY SALES
None

PROGRAM STATUS
ULCANS Woodland is currently in production. ULCANS Desert is in final development, and will be type classified in FY00. Subsequent variants, including Arctic/Snow and Urban are also slated for test and evaluation.

PROJECTED ACTIVITIES
3QFY00 ULCANS Desert MS IIIB/type classification
4QFY00 ULCANS production continues

PRIME CONTRACTORS
BAE Systems (Austin, TX) (formerly Marconi Aerospace Defense Systems)



* See appendix for list of subcontractors

Sustain the Force

Medical Research and Development

The Commander, U.S. Army Medical Research and Materiel Command (USAMRMC), is the Army Medical Command's chief technology officer. He is responsible for enhancing battlefield medical care by adapting new technologies that will significantly reduce deaths on the battlefield. The major goals of the Army combat health support (CHS) science and technology (S&T) program are threefold:

- Prevent illness and injury.
- Sustain optimum military effectiveness.
- Treat casualties.

The greatest payoff from the investment in medical S&T comes from identifying medical countermeasures that eliminate and treat health hazards. These include biomedical technologies, information and materiel, environmental injury, operational stress, and aggressor weapons.

Combat Casualty Care

Life support for trauma and transport (LSTAT) was approved by the U.S. Food and Drug Administration for human use on June 29, 1998. LSTAT is a NATO, stretcher-based, mini-intensive care unit that incorporates resuscitative and life-sustaining capabilities for field surgery and medical support during evacuation. Northrop Grumman developed the LSTAT concept with assistance from the Walter Reed Army Institute of Research and the Defense Advanced Research Projects Agency. The Army owns the patent for LSTAT. The Army, Air Force, and Marines are working with Northrop Grumman on operational testing and evaluation of the system, and on plans for joint service use.

LSTAT provides sophisticated trauma care closer than ever to a battlefield or accident scene; patients can be quickly stabilized in the field before and during transport to a hospital by ground vehicles, helicopters, fixed-wing aircraft or ships. LSTAT incorporates a number of onboard devices for medical care, including the following:

- Instruments to monitor heart and breathing rates, determine blood chemistry, and administer oxygen
- A ventilator to provide breathing support
- An infusion pump to deliver drugs or fluids
- A suction pump to clear congested airways or abdominal fluid
- An automated external defibrillator to revive a patient

Patient medical data is recorded onboard the LSTAT unit and can be transmitted to the hospital or trauma center via data links.

Fibrin Bandage. Army medical researchers and clinicians working in conjunction with the American Red Cross have developed a dry fibrin sealant bandage that will save lives by quickly stopping blood loss from severe wounds on the battlefield. Excessive bleeding is the most common cause of death for wounded soldiers. Even in the hospital, the major causes of early death among those who die of wounds are central nervous system injury and uncontrolled bleeding. Devices or techniques that slow or control bleeding, and are usable far forward on the battlefield have the greatest potential to save lives.

The new bandage is made from the last two proteins in the human blood coagulation cascade, freeze-dried on an absorbable backing. The resulting bandage measures about four-by-four inches and is a quarter of an inch thick. It has the stiff consistency of a meringue baked on a piece of cloth. The bandage is applied with direct pressure, crushing the meringue into the wound where it quickly dissolves and coagulates. The pressure slows bleeding and maintains high local concentrations of the active ingredients. The clot sets within a minute. Animal research demonstrates that the bandage can reduce blood loss by 50% to 85% and prevent the shock normally associated with blood loss from battlefield wounds. This research demonstrates the potential for the far-forward use of these dressings by medics, buddies, and forward surgical teams.

Extended Blood Shelf-life. Army contractors at the University of Cincinnati have developed and demonstrated a nine-week storage system for liquid red blood cells. The system is fully compatible with current military and civilian blood bank and transfusion medicine practice. The Army has filed a patent application for this system that suspends the blood cells in a specially buffered solution. The extended shelf life will enable the military to maintain greater supplies of blood in forward locations while reducing losses from outdating.

The civilian community will benefit by saving several hundred thousand units of blood per year. Additionally, the extended shelf life will enable civilian agencies to provide more blood to remote areas, smooth out seasonal shortages, and make autologous blood systems more effective. The U.S. Army built the world's first blood bank at Cambrai in 1917 and fielded three-week blood in WWII, Korea, and Vietnam. The Army developed five-week blood storage and supported the basic research for six-week blood. The current five- and six-week blood storage systems were approved by the FDA in 1979 and 1981, respectively.

Prototype Armored Medical Evaluation Vehicle (AMEV). The AMEV is intended to replace the M113A2/A3 Armored Ambulance as the medical evacuation platform in heavy battalions. The AMEV uses excess-depot M2A0 Bradley Fighting Vehicles (BFVs) that have the turret removed and the roof squared off and raised thirteen inches. As a BFV variant, the AMEV overcomes the shortfalls of the M113, identified during Operation Desert Shield/Storm. It has mobility, survivability, and maintainability equivalent to the supported force. Medical capability includes on-board oxygen, suction, and storage of essential medical items and equipment.

The AMEV is capable of carrying four litter patients, four ambulatory patients, and a crew of three. A prototype AMEV was delivered to the 4th Infantry Division on September 16, 1998 for evaluation and participation in the National Training Center (NTC) rotation 99–05, in March 1999. Design and fabrication of an engineering and manufacturing development vehicle began in June 1999. This vehicle will be a production representative for the limited user test and production qualification test.

Advanced Technology/Telemedicine

USAMRMC recently entered into a contract with InformaTech, Inc. to produce a limited number of personal information carriers or PICs. The PIC is a small, portable data storage device that maintains up to eight megabytes of information. It will be used for recording, storing, and transmitting part or all of an individual's computer-based patient record, and can be worn in much the same manner as a dogtag. When

coupled with a small sleeve adapter, the PIC allows all types of computers to write medically pertinent data, from larger personal computers located in fixed-facility hospitals to smaller palm top or hardened laptops in field medical units located forward on the battlefield.

Currently, the PIC will store pre-deployment demographic data, records of all treatment provided during a field deployment, and any post-deployment surveys. This project has been a model of acquisition reform, using commercial off-the-shelf technologies and submitting them to military-unique tests to determine applicability and functionality. The next step in the process is a Department of Defense (DoD)-directed proof of concept test that will be conducted from December 1999 through February 2000. Final approval by DoD is expected in the April 2000 timeframe and deployment could begin as soon as the fall of that year.

Infectious Disease Research

The Military Infectious Diseases Research Program, a joint Army-Navy program, has been highly successful in discovering, testing, and fielding products designed to protect military personnel against infectious diseases, usually the most common cause of military casualties. In recent years, vaccines to prevent Japanese encephalitis, a disabling infection of the brain that occurs throughout Asia, and hepatitis A, a worldwide cause of infectious hepatitis, have been licensed. Drugs for treatment or prevention of malaria, mefloquine, and halofantrine were both developed at the Walter Reed Army Institute of Research.

Currently, the program leads the world in discovering drugs and vaccines for prevention of malaria, vaccines to prevent bacterial diarrhea, vaccines for dengue, and many other potentially important products. A unique system of laboratories to study tropical diseases, discover new products, and produce pilot lots of drugs and vaccines for clinical trials, makes this program particularly efficient in producing new products to protect soldiers against real threats.

Medical Chemical and Biological Defense

Several initiatives in the Medical Chemical and Biological Defense Research Program respond to shortfalls in the area of medical countermeasures against chemical and biological warfare threats. For chemical threat agents, the advanced anticonvulsant research efforts identified two prospective agents that may be administered in a single intra-muscular dose for soldier/buddy use. These stop ongoing convulsive seizures and protect against nerve agent-induced, seizure-related brain damage.

Another significant development in medical chemical defense is the introduction of the prototype for a real-time, portable, non-invasive oximeter that provides determinations of methemoglobin levels in individuals. Induction of methemoglobin is recognized as a prophylaxis and a treatment for cyanide exposure, but can reduce the oxygen-carrying capacity of the blood. This device enables professionals to evaluate the adequacy of protection against and treatment for cyanide exposure.

The laboratories of USAMRMC continue to improve and/or develop pre- and post-exposure medical countermeasures against biological threat agents. Since 1998, however, the advanced development arm of vaccine research has followed a new path. The Joint Vaccine Acquisition Program, under the auspices of the Joint Program Office for Biological Defense, selected a prime systems contractor. The prime contractor is responsible for taking biological defense vaccines from the tech-base developers (USAMRMC) and developing these vaccines for licensure, production and storage.

In the area of training, the Medical Management of Biological Casualties course was offered for a third year by satellite broadcast. Use of this medium greatly expands the ability of USAMRMC to respond to increasing training demands in this area for DoD and non-DoD medical personnel.

An additional effort involves the area of rapid diagnostics; here, collaborative work is underway with laboratories of the USAMRMC, the U.S. Navy, the Department of Energy, and the Defense Advanced Research Projects Agency.

Congressionally-Directed Research

The USAMRMC continues to manage DoD medical research programs mandated by Congress. More than $870 million has been applied to breast cancer research, through more than 1,800 contracts and grants awarded on a peer-review basis. Using funds appropriated by Congress, the USAMRMC will continue peer-reviewed programs for basic research in breast, ovarian, and prostate cancer; osteoporosis; and neurofibromatosis.

Gulf War Illness. The USAMRMC is currently managing approximately 45 projects worth $40 million, in addition to other in-house efforts, on Gulf War illness research. Since 1994, peer review panels have requested and reviewed the following:

- Projects for epidemiological studies in human subjects
- Studies of possible long-term or delayed clinical effects of low-level exposures to chemical warfare agents
- Studies of causal relationships between symptoms experienced by Gulf War veterans and possible exposures to hazardous material, chemical warfare agents, stress, and potentially hazardous combinations of inoculations and investigational drugs
- Studies of historical war syndromes with chronic, non-specific symptoms and physiological outcomes.

National Automotive Center (NAC)

The National Automotive Center (NAC) leverages commercial industry's large investment in automotive technology research and development, and initiates shared-technology programs focused on benefiting military ground vehicle systems. Located at the Tank Automotive and Armaments Command (TACOM), NAC is part of the Tank-Automotive Research, Development and Engineering Center (TARDEC).

The NAC serves as the catalyst linking industry, academia, and government agencies as a clearinghouse for the development and exchange of automotive technologies. The NAC executes collaborative research and development (R&D) contracts and other initiatives. These capitalize on commercial industry's investment in well-defined, high return-on-investment areas, tied to key Army science and technology objectives related to advanced land combat. The NAC focuses collaborative R&D contracts on military automotive technology thrust areas that include mobility, electronics, logistics, safety, and environmental protection. The goals are two-fold:

- Improve the performance and endurance of ground vehicle fleets.
- Reduce ground vehicle design, manufacturing, production, operating, and sustainment costs.

Two-way industry/government technology transfer is pursued under DoD's Dual Use Science and Technology (DUS&T) program as well as through cooperative research and development agreements (CRADAs). The activities of the NAC are supported by other government agencies through a linkage created under memoranda of agreement. These linkages permit the NAC to consolidate and leverage the collective expertise of federal government departments such as Energy, Transportation, Commerce, and other DoD agencies.

In FY99, the NAC initiated four new dual-use automotive technology agreements using other transaction authority with industry and academia. Through FY99, a total of twenty-six such contracts, with a total value of approximately $129,000,000, have been undertaken. The principal technology areas under investigation, which support 21st century vehicle modernization, are fuel cell research and development, improved engine efficiency, hybrid engine technology, lightweight materials, synthetic fuels, and advanced drive trains and systems.

At the close of FY99, the NAC had 40 active CRADAs, including eight new agreements, to investigate automotive technologies involving critical fuel, safety, maintenance, modernization, and manufacturing issues. Two indicative agreements were signed with:

- Focus: HOPE, Detroit, MI (involving agile manufacturing); and
- LAU Technologies, Littleton, MA, (to improve manufacturability of electronic microchips [HMMWV "glow plug"]).

The NAC's research arm, the Automotive Research Center (ARC), has contracted with the University of Michigan as lead contractor for basic research initiatives in the following areas: vehicle terrain dynamics; vehicle hardware/human interface simulation; modeling and simulation of vehicle structures; advanced propulsion simulation; and systems integration issues and design.

National Rotorcraft Technology Center (NRTC)

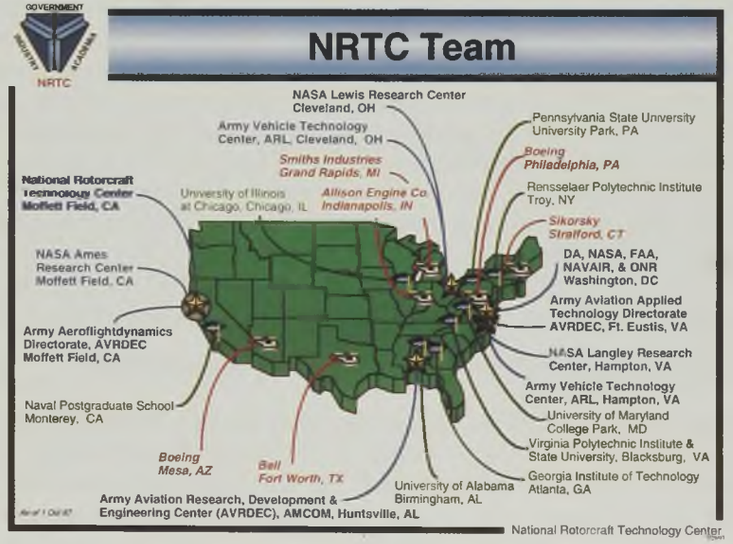
The NRTC is an innovative partnership of government, industry, and academia to maintain U.S. preeminence in rotorcraft technology. Its strategic goal is to ensure the continued superiority of U.S. military rotorcraft, while expanding the world rotorcraft market and U.S. industry's share of that market. To achieve this goal, the NRTC manages a collaborative research and development program that focuses on the following technology thrusts:

- Process and product improvement for affordability, quality and environmental compliance
- Enhanced rotorcraft performance
- Passenger and community acceptance
- Expanded rotorcraft operations
- Technologies to support harmonized military qualification and civil certification

The principal participants in the government element of NRTC are the Army and the National Aeronautics and Space Administration (NASA). The Navy and Federal Aviation Administration (FAA) also play important roles; a memorandum of agreement joins these organizations.

Rotorcraft Industry Technology Association (RITA)

The rotorcraft industry formed the Rotorcraft Industry Technology Association (RITA), a non-profit corporation, to serve as its focal point. RITA's membership comprises principal members, supporting members, and associate members. Principal members include all three major U.S. rotorcraft manufacturers: Bell Helicopter Textron; Boeing Helicopters (including the former McDonnell Douglas Helicopter Systems); and Sikorsky Aircraft.



Supporting members include an expanding list of subsystem manufacturers, including Allison Engines and Smiths Industries. Associate members from academia include Rensselaer Polytechnic Institute, the Naval Postgraduate School, and the University of Alabama. Academia also participates through the integration of the Rotorcraft Center of Excellence (RCOE) Program into NRTC. The current RCOEs include the Georgia Institute of Technology, Pennsylvania State University, and the University of Maryland.

Guidance for the NRTC's technology thrusts has been established by executive leadership from the rotorcraft community (which includes government, industry, operators, and academia), and is refined as the need arises. Annually, industry—through RITA—then plays the principal role in identifying the projects it will undertake, provides funds that match or exceed NRTC government funding, and agrees to share the resulting technology with other program participants.

Government funding for RITA projects comes in equal portions from the Army and NASA. The government has established cooperative agreements with RITA and with each of the RCOE universities. These serve as the mechanism for collaborating on the definition and execution of the technical programs, and for providing government funds. The government office of the NRTC is located in existing facilities at Ames Research Center, Moffett Field, California. This office is building to the maximum staff of seven people.

Corps of Engineers Research and Development

The spectrum of likely operations for the United States Army spans a variety of missions, including humanitarian assistance, disaster relief, peacekeeping and peacemaking, and major theater wars. Recent history indicates that the number of deployments is potentially extensive; the Army was deployed to over 60 different countries at any point in time during FY99. Given the world's current and emerging geopolitical relationships, this trend is likely to continue. The United States Army Corps of Engineers (USACE) research and development (R&D) program stands prepared to support the nation's warfighters across this spectrum of conflict in all environmental conditions. The goal of USACE's R&D efforts is to provide America's warfighters with the best equipment, planning tools, and informational resources possible.

Engineer Research and Development Center (ERDC)

As part of the USACE re-engineering program, the USACE R&D laboratory system has recently formed the Engineer Research and Development Center (ERDC) (website URL: www.erdc.usace.army.mil). The ERDC mission is to provide integrated research, development and engineering services in the fields of civil engineering and environmental quality to support the programs of USACE, Army, DoD, and the nation. Within the ERDC, research and engineering studies are conducted on a variety of topics related to combat engineering, infrastructure support and maintenance, and environmental quality and stewardship. R&D scientific and engineering investigations range from basic and applied research, to problem identification, and to final implementation of the R&D product.

The combined ERDC staff numbers 2,500, with an annual research program of over $430 million. Shown in the figure below are the four geographic sites and eight laboratories that make up the ERDC.

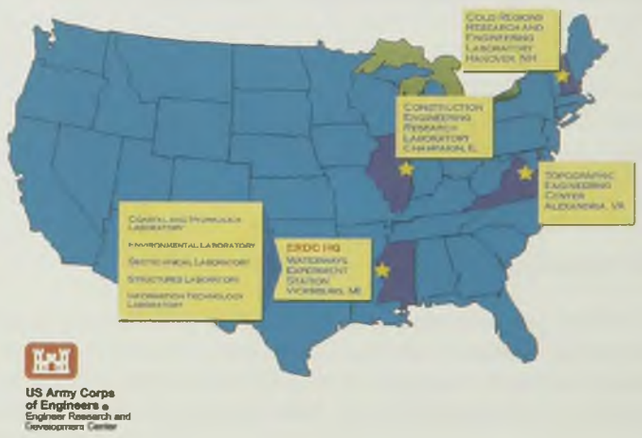
Army benefits to be achieved through the formation of the ERDC include the following:

- Reduction in the cost of doing business
- Improvement in coordination and teamwork among technical experts at the four sites
- "One-door" access and increased customer responsiveness

Tele-engineering

USACE is also working to provide the engineer on the ground with the ability to resolve the tough technical challenges encountered by the smaller engineer force of today and the future. One method is through tele-engineering. Tele-engineering is an ongoing major initiative to

Engineer Research and Development Center



establish an engineering "telepresence" to support deployed engineers. Tele-engineering will provide connectivity between deployed engineers and the appropriate subject matter experts (either in CONUS or OCONUS). This will enable the implementation of new technologies, or the application of computational capability beyond the capabilities existing within the theater of operations. In addition to its contribution to resolving battlespace challenges, Tele-engineering will be an additional mechanism for rapid technology transfer from the R&D community to the field.

Technology transfer is an integral aspect of the process of bringing products of USACE R&D programs to the attention of other DoD and federal agencies, state and local governments, and private industry. Technology transfer can assist other groups in making maximum use of these technologies. Thus, research products developed to meet warfighter needs can benefit the Nation. Specific examples of USACE work are described below.

Airfields and Pavements to Support Force Projection

This USACE program addresses the warfighters' need for more reliable force-projection platforms, to support strategic force deployment from CONUS and operational employment within the theater of operations. Improved reliability will be achieved by development of advanced design, analysis, and evaluation procedures for airfields and pavements, as well as improved construction, maintenance, and repair systems. Advanced analytical pavements models will be developed. These realistically depict the effects of the following on the predicted performance of permanent and expedient airfields and pavements:

- Current and future-generation aircraft loads
- New and/or indigenous construction material properties
- Impact of severe temperature and moisture conditions, including permafrost.

Research products will also include new construction, maintenance, and repair materials and methods. These aim to reduce construction effort, improve the readiness of permanent airfields, and enable the use of indigenous low-quality materials for expedient airfields.

Survivability and Protective Structures

The goal of the Army's survivability and protective structures' science and technology program is to perform research that enhances force protection, from the foxhole to fixed facilities, against weapons threats ranging from small arms and terrorist weapons, to advanced conventional weapons equipped with multi-spectral sensors. The program has three focus areas: force protection against terrorist threats; force protection on the battlefield; and force protection against advanced conventional weapons. The research produces technologies that provide force protection through:

- The prediction of blast loads (blast shielding effects from barriers and buildings)
- Structural response (including progressive structural collapse for a wide variety of structural types)
- Hazards to personnel
- Expedient design/retrofit methods for increased survivability, including structural hardening and camouflage, concealment, and deception.

Integral to the force protection research is the use of high-performance computing to simulate blast loading and structural response, the application of indigenous and/or lightweight advanced composite materials, and the development of expedient survivability procedures.

Anti-Terrorist (AT) Planner software is being developed to assist the military commander and his staff in assessing the vulnerability of installations to vehicle bombs and in developing protective measures. The software has a graphical-based interface for calculating and viewing the effects of vehicle bombs and estimating the expected hazards to personnel due to airblast, structural damage, and window breakage. It assists in developing adequate perimeter standoff distances and provides detailed information on methods of retrofitting walls and windows for increased blast resistance.

Conventional building components, such as windows and masonry walls, are highly vulnerable to terrorist vehicle bomb attack. They fail catastrophically and produce hazardous flying debris. When sufficient standoff is not available to reduce the blast effect, other means of mitigating the debris hazard may be needed. Recently, methods have been developed to retrofit the windows and walls of existing buildings. The window retrofit involves the application of a window film to hold the glass fragments together, in conjunction with a horizontal bar to catch the filmed window and stop it just inside the opening. The wall retrofit uses a high-strength fabric located behind the wall and anchored to the floor and roof of the structure. The fabric catches the hazardous masonry block debris and prevents it from entering the building. Both of these methods have been successfully validated in recent joint U.S./Israeli full-scale vehicle bomb experiments on a five-story building.

To understand the detailed cause and effect relationships associated with blast-induced loading in complex geometries, structural motion, deformation, and damage, researchers use high-performance computing simulations of the shock physics and dynamic structural responses of conventional and hardened facilities. The research has pioneered the exploitation of parallel computing. More than 500 processors at the DoD Major-Shared Resource Center in Vicksburg, MS, compute explosive detonations, airblast and ground-shock propagation, and the loads on and responses of structural models.

Revetment concepts, suitable for rapid construction, have been developed and demonstrated to protect U.S. Army aviation assets against the blast and fragmentation effects of conventional weapons. The revetments were constructed using Hesco Bastion "Concertainer" material, a geocomposite that consists of galvanized wire mesh panels lined with a geotextile fabric. Analytical studies and field experiments were used to determine the increased survivability of the protected aviation assets and to optimize the height of the revetments. The revetment concepts significantly increased the survivability of the aviation assets.

Simplified Survivability Assessment (SSA)

A computerized simplified survivability assessment (SSA) procedure is being developed to aid the engineer officer in planning and implementing the survivability mission. The SSA has four functional areas:

- Survivability planning
- Survivability measures
- Design procedures
- Weapons effects calculations

Survivability planning provides the resources and timeline required to achieve a quantified level of survivability. Survivability measures provide construction details and instructions, with bills of materials for survivability positions. The design procedure and weapons effects calculations allow the engineer to design a new overhead cover position, or evaluate the safety and effectiveness of existing positions. Significant savings in time will result from using the SSA for planning survivability missions, and the engineer officer will have readily available information on weapons effects and design procedures.

Advanced Large Area Tonedown (ALAT)

A new innovative camouflage technique known as advanced large area tonedown (ALAT) has been developed to camouflage and conceal earthwork and construction on the battlefield. ALAT is a water-based, spray-on mixture of natural fiber (wood or paper), tackifiers (binders), and coloring agents. ALAT techniques involve the use of commercial mixing machinery to mix the various additives with water into sprayable slurry. Currently, ALAT provides a means of tailored visual camouflage to site-specific background conditions. Future R&D in ALAT will address development of additives for infrared and radar signature manipulation.

ALAT will provide a means of camouflage treatment for large critical facilities, such as logistics nodes/supply points, command posts, tactical assembly areas, and other forward-deployed bases. ALAT is well suited to the rapid camouflage treatment of protective berm(s), construction scars, vehicle/equipment tracks, and any other distinct signature cues associated with critical assets/facilities. In addition, this technology can be used to support deception operations by producing decoy operating surfaces, decoy lines of communication, decoy berms, and signature cues to enhance threat detectability of material deception(s).

Joint Modular Lighterage System (JMLS)

The Army is also participating in the development of the Joint Modular Lighterage System (JMLS), which is managed by the Navy. This program will develop and test improved causeway and lighterage systems to improve cargo offload speed under normal sea states and allow for successful offload under challenging sea state conditions. These efforts will significantly improve operational capability and flexibility, truly integrating Logistics Over The Shore (LOTS) capabilities. JMLS equipment will allow the Army to conduct LOTS exercises under adverse sea state conditions. The extended capabilities of the joint Army/Navy LOTS program allow the Army to proceed with deployment of forces under less than ideal sea and weather conditions in support of the Army Vision.

Mobile Ballistic Research System (MBRS)

A Mobile Ballistic Research System (MBRS) has been developed to allow researchers to investigate the penetrability of in-situ rock targets around the world. The system consists of a 153-mm-diameter ballistic powder gun that is capable of launching 55 kg penetrators, as large as 125 mm in diameter, up to 1 km/s. The gun can launch penetrators at

angles ranging from 0° (horizontal) to 90° (fully upright) through the use of a complex system of hydraulic positioning rams. Self-contained, the MBRS is capable of supplying all the necessary services and utilities required for operation at remote sites. Results of recent experiments demonstrated that developmental projectiles could penetrate five to six body lengths into granite.

Sustainment Engineering

The USACE R&D community is currently developing analytical civil engineering methodologies and innovative construction materials. These provide the following:

- Assessment and repair of roadways to support military-unique loadings
- Rapid, remote classification/repair of existing bridges
- Tactical military hydrologic forecasting of streamflow conditions, including icing
- Advanced mobility modeling for all-season rapid maneuver operations
- Innovative procedures for conducting logistics-over-the-shore (LOTS) operations over remote beaches or through tidal areas

With current technology and engineering capabilities, engineers require weeks to evaluate lines of communications (LOC) road and bridge segments, assess LOC segments' capacity to support military-unique loadings, and determine the engineers' ability to establish, repair, or rehabilitate the transportation infrastructure to support the required mobility operations. An RDT&E effort focused on this issue will enable the force to rapidly generate and select the optimal structural/functional options for LOC stabilization, repair, or upgrade. It will enable the force to use innovative methods/procedures, with indigenous construction materials, to rapidly establish the network of LOCs required to support force projection and sustainment of deployed forces. Theater bridges are critical nodes within this LOC network; technologies will be developed to enable rapid assessment of bridge military load class, and determination of retrofit/upgrade options to support military traffic. Engineers will be able to predict road deterioration caused by military traffic and determine the engineering effort required to repair/maintain LOCs necessary to support sustainment operations.

Terrain

The ERDC is the DoD Center of Expertise for research in the topographic sciences. Research initiatives involve technologies that will help those who move, shoot, and communicate on the battlefield to "fight smarter," through superior knowledge of the entire battlefield terrain and environment. Development efforts will enable the commander to:

- Locate and position enemy and friendly forces in day/night all-weather conditions
- Provide crucial terrain data for command and control systems (C2) as well as modeling and simulation systems
- Enhance the speed and accuracy of maneuver and weapon systems

The technology being developed will enhance the tactical commander's ability to exploit his knowledge of combat-relevant intelligence as a force multiplier to conduct and win operations.

Using tactical/strategic/space sensor data, together with terrain databases as input, the technology program emphasizes the following:

- Automating the process of detecting change on the battlefield
- Identifying battle-significant features
- Exploiting space-based/remote-sensing information (especially for deep operations and over denied areas)
- Integrating the impacts of the battlefield environment to significantly improve combat planning and operations

Current work will significantly enhance the geospatial data management and dissemination capabilities of storing, formatting, transforming, and distributing extremely large volumes of terrain data at real or near-real times. The focus of current research is on developing automated feature-extraction techniques that exploit spectral (hyper- and multi-), interferometric synthetic aperture radar (IFSAR), light detection and ranging (LIDAR), electro-optical and other sources to produce high resolution geospatial data bases rapidly.

Sensor Performance Technologies

Current and future weapons and intelligence-collection systems rely heavily on sensors. Each sensor has its strengths and weaknesses in various terrain and weather conditions. Terrain and weather effects (including cold temperatures, snow, ice, and frozen ground) dramatically affect weapon

systems that contain infrared and passive/active millimeter wave sensors. Physics-based modeling capabilities and 3D terrain visualization tools are merging under the 3D Dynamic Multi-Spectral Synthetic Scene Visualization STO, to create terrain and weather-dependent infrared and millimeter wave terrestrial backgrounds for synthetic environments and sensor performance templates.

This mission planning and rehearsal tool will provide commanders and staff with unparalleled situational awareness to conduct detailed intelligence preparation of the battlefield, greatly enhance development of courses of action, and increase target acquisition by determining sensor performance in various weather conditions, times of day, and attack angles and directions. This tool will also provide materiel developers with physics-generated models of winter backgrounds in support of their RDT&E efforts.

Training Lands

Training land management research will lead to an improved knowledge base of cause-effect relationships and mitigation techniques related to the interaction of training and testing actions and environmental processes. Research results will include an approach to simulating impacts of military operations on the natural resource base and predicting thresholds for sustainable use. It will identify technologies to manage resources to achieve sustainable use.

The work will take advantage of existing and emerging modeling and mitigation technologies in erosion control, community ecological dynamics, and noise propagation and management. The effort will incorporate information on training and testing land use distribution; it will define the interaction between this use and environmental processes in different environments with different model inputs, outputs, and data resolution. This will provide a simulation and prediction capability for decision support. The cause-effect and mitigation knowledge and the integrated set of models will support training and testing through understanding of the following:

- The ability of land to recover from impacts
- Erosion and deposition processes
- Avoidance of impacts on protected species and sites
- Alternative techniques to mitigate impacts

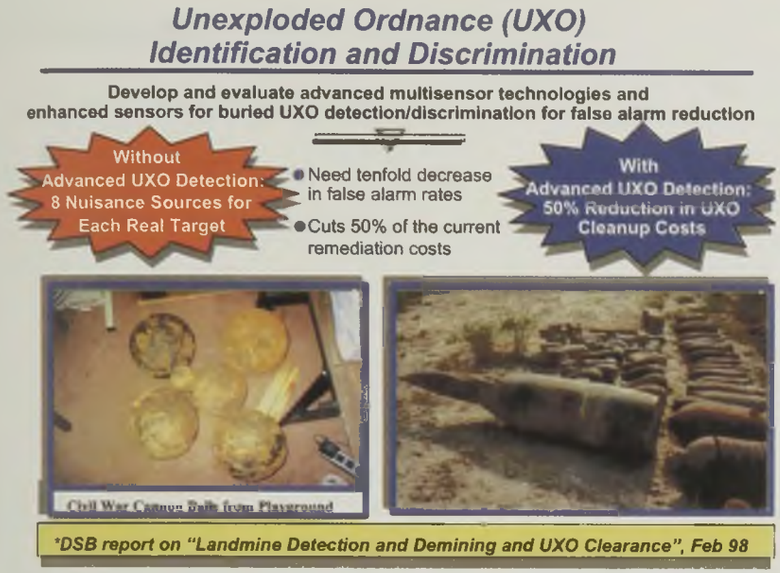
The increased knowledge base and advanced decision-support capabilities will enable proactive and cost-effective management of lands for sustainable use, and up to 50% reduction of current land use constraints. These efforts will enhance the condition of land to support Army readiness. The knowledge and decision-support capability will ensure the following:

- Constraints on land use are warranted
- Improvements are made in measuring carrying capacity
- Improvements are made in the ability to plan, schedule and execute training and testing missions and manage lands with the least constraint, and in a way that provides for the most realistic conditions.

Environmental Quality: Subsurface Detection of Buried Unexploded Ordnance

The 1997 Unexploded Ordnance (UXO) Clearance Report to Congress estimates that millions of acres throughout the United States, including 1900 formerly used defense sites, and 130 base realignment and closure (BRAC) installations, potentially contain buried UXO contamination. Current methods used to detect buried UXO result in the determination that nominally 95% of the excavated objects are non-hazardous-causing. Approximately 75% of the costs of remediating a UXO site are spent on excavating these false targets. These costs effectively reduce the resources available to the warfighter for combat operations and development. The February 1998 Defense Science Board (DSB) Task Force report titled Landmine Detection and Demining and Unexploded Ordnance (UXO) Clearance recommends a short-term (3–5 year), ten-fold false-alarm reduction as the goal of the UXO environmental remediation R&D program.

The Army has initiated this technology development program to achieve the DSB goals while maintaining probabilities of detection at or above current levels (90–95%). This will be accomplished by thoroughly defining the impact of site conditions on sensing and discrimination of UXO to provide a foundation for more robust sensing and physics-based multi-sensor fusion approaches. By FY04, the Army plans to develop and field-demonstrate UXO sensing and analysis that will reduce nuisance alarm rates by 90% over a wide variety of conditions, while maintaining or improving the current probability of detection (Pd) levels (90–95%). This program will be coordinated directly with the Army Joint UXO Coordination Office (JUXOCO) as part of the DoD UXO Center of Excellence (UXOCOE). This will ensure that the research supports and complements the total landmine, demining, and UXO detection program.



Hazardous Waste Remediation of Army Sites

Explosives, organics, and heavy metals-contaminated soils and groundwater exist at a large number of Army installations. The cost to complete the Army's restoration program at its active and BRAC installations is currently estimated at $7 billion. This reduces resources available to the warfighter. In some cases, training-range activities must be substantially altered or stopped completely, due to off-site migration of the lead. Current processes to remediate these hazardous wastes typically involve dig, haul, and treat for soils; and pump and treat for groundwater. The Army believes in-situ technologies can reduce treatment costs by as much as an order of magnitude.

The Army is conducting RDT&E to address these requirements, with an emphasis on developing passive-treatment technologies. For explosives and organics, technologies include natural attenuation, bio-augmentation, indigenous and enhanced biological transformations, reactive barriers (such as zero valent ion barriers), and integrated processes that couple chemical transformations of the contaminants with microbial mineralization of the transformation products. For heavy metals, technologies include phytoremediation, chemical treatment, electrokinetic treatment, advanced contaminated extracts treatment, and an in-process analysis method for treating soils.

Risk/Hazard Assessment Tools for Military Unique Compounds

The Army utilizes risk assessment procedures to determine hazardous waste cleanup target levels and to evaluate remediation alternatives that provide the most cost-effective approach to reach these levels. The Army has 90 sites that require determination of the risk or hazard associated with site contamination, currently estimated to exceed $55M. Currently, site-specific data on both exposure potential and effects are often unavailable, causing high levels of uncertainty factors in the risk analysis process; these, in turn, result in overly conservative levels of cleanup and excessive cost for remediation.

To reduce this uncertainty, an Army RDT&E program is being conducted to develop a risk assessment modeling system (RAMS). The RAMS would link models of fate and transport to the exposure and effects of explosives and their degradation by-products at the genetic, individual, and population levels within an ecosystem. A suite of numerical models will provide both human and ecosystem risk assessment of bioavailability and the potential for trophic transfer, and allow reduced uncertainty in contaminant fate and transport needed to determine exposure potential.

Currently accepted dose-response effects assays on specific endpoint organisms will be refined to develop more accurate methods to assess exposure and effects. Genosensors for major classes of organisms will also reduce the uncertainty by providing site-specific assessments of uptake potential and toxic effect. The RAMS is planned to reduce the time required to conduct a quantitative risk assessment from years to months, saving an estimated 25% of the cost of risk assessment. Substantial cost savings in cleanup costs are also expected by reducing the influence of uncertainty in setting cleanup targets, thereby enabling the use of less costly contaminant treatment methods.

APPENDICES

ARMY COMBAT ORGANIZATIONS

Army organizations are inherently built around people and the tasks they must perform. Major combat organizations are composed of smaller forces as shown here.

SQUAD

Leader is a sergeant

Smallest unit in Army organization

Size varies depending on type—Infantry (9 men), Armor (4 men), Engineer (10 men)

Three or four squads make up a platoon

PLATOON

Leader is a lieutenant

Size varies–Infantry (40 men), Armor (4 tanks, 16 men)

Three or four platoons make up a company

COMPANY

Commander is a captain

Usually 150–220 men

Artillery unit of this size is called a battery

Armored Cavalry or Air Cavalry unit is called a troop

Basic tactical element of the maneuver battalion or cavalry squadron

Normally five companies make up a battalion

BATTALION

Commanded by a lieutenant colonel

Tactically and administratively self-sufficient

Armored Cavalry and Air Cavalry equivalents called squadrons

Two or more combat battalions make up a brigade

BRIGADE

Commanded by a colonel

May be employed on independent or semi-independent operations

Combat, combat support or service support elements may be attached to perform specific missions

Normally three combat brigades are in a division

DIVISION

Commanded by a major general

Fully structured division has own brigade-size artillery, aviation, engineer, combat support and service elements

Two or more divisions make up a corps commanded by a lieutenant general

Acquisition Categories (ACAT): ACAT I programs are Milestone Decision Authority Programs (MDAPs) or programs designated ACAT I by the Milestone Decision Authority (MDA). ACAT I programs have two sub-categories:

1. **ACAT ID,** for which the MDA is USD (A&T). The "D" refers to the Defense Acquisition Board (DAB), which advises the USD (A&T) at major decision points.
2. **ACAT IC**, for which the MDA is the DoD Component Head or, if delegated, the DoD Component Acquisition Executive (CAE). The "C" refers to Component. The USD (A&T) designates programs as **ACAT ID** or **ACAT IC**.

ACAT IA programs are MAISs or programs designated by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence [ASD (C3I)] to be ACAT IA. A **MAIS** is an AIS acquisition program that is:

1. Designated by the ASD (C3I) as a MAIS, or
2. Estimated to require program costs in any single year in excess of 30 million in FY 1996 constant dollars, total program costs in excess of 120 million in FY 1996 constant dollars, or total life-cycle costs in excess of 360 million in FY 1996 constant dollars.

ACAT IA programs have two sub-categories:

1. **ACAT IAM**, for which the MDA is the Chief Information Officer (CIO) of the Department of Defense (DoD), the ASD (C3I). The "M" (in ACAT IAM) refers to Major Automated Information System Review Council (MAISRC). (Change 4, 5000.2-R)
2. **ACAT IAC,** for which the DoD CIO has delegated milestone decision authority to the CAE or Component CIO. The "C" (in ACAT IAC) refers to Component.

ACAT II programs are defined as those acquisition programs that do not meet the criteria for an ACAT I program, but do meet the criteria for a major system, or are programs designated ACAT II by the MDA.

ACAT III programs are defined as those acquisition programs that do not meet the criteria for an ACAT I, an ACAT IA, or an ACAT II. The MDA is designated by the CAE and shall be at the lowest appropriate level. This category includes less-than-major AISs.

ACAT IV Programs not designated as ACAT I, II, III and used to differentiate these non-major program managed by a systems manager within a materiel command rather than by a Program, Project, Product Manager (PM). These programs receive an In Progress Review (IPR) and require a decision by the materiel command commander (or appointed designee) at the milestone review. (AR 70-1, 4-1f)

Acquisition Phase: All the tasks and activities needed to bring a program to the next major milestone occur during an acquisition phase. Phases provide a logical means of progressively translating broadly stated mission needs into well-defined system-specific requirements and ultimately into operationally effective, suitable, and survivable systems. An example of an acquisition phase is Program Definition and Risk Reduction. The acquisition phases for the systems described in this handbook are defined in the Introduction on page IX.

Acquisition Program: A directed, funded effort designed to provide a new, improved or continuing weapons system or AIS capability in response to a validated operational need. Acquisition programs are divided into different categories that are established to facilitate decentralized decision-making, and execution and compliance with statutory requirements.

Advanced Concept Technology Demonstrations (ACTDs): ACTDs are a means of demonstrating the use of emerging or mature technology to address critical military needs. ACTDs themselves are not acquisition programs, although they are designed to provide a residual, usable capability upon completion. If the user determines that additional units are needed beyond the residual capability and that these units can be funded, the additional buys shall constitute an acquisition program with an acquisition category generally commensurate with the dollar value and risk of the additional buy.

Automated Information System (AIS): A combination of computer hardware and software, data, or telecommunications, that performs functions such as collecting, processing, transmitting, and displaying information. Excluded are computer resources, both hardware and software, that are physically part of, dedicated to, or essential in real time to the mission performance of weapon systems.

Commercial and Non-Developmental Items: Market research and analysis shall be conducted to determine the availability and suitability of existing commercial and non-developmental items prior to the commencement of a development effort, during the development effort, and prior to the preparation of any product description. For ACAT I and IA programs, while few commercial items meet requirements at a system level, numerous commercial components, processes, and practices have application to DoD systems.

Demilitarization and Disposal: At the end of its useful life, a system must be demilitarized and disposed. During demilitarization and disposal, the PM shall ensure materiel determined to require demilitarization is controlled and shall ensure disposal is carried out in a way that minimizes DoD's liability due to environmental, safety, security, and health issues.

Developmental Test and Evaluation (DT&E): DT&E shall identify potential operational and technological capabilities and limitations of the alternative concepts and design options being pursued; support the identification and description of design technical risks; and provide data and analysis in support of the decision to certify the system ready for operational test and evaluation.

Integrated Product and Process Development (IPPD): A management technique that simultaneously integrates all essential acquisition activities through the use of multidisciplinary teams to optimize the design, manufacturing and supportability processes. IPPD facilitates meeting cost and performance objectives from product concept through production, including field support. One of the key IPPD tenets is multidisciplinary teamwork through Integrated Product Teams (IPTs).

Integrated Product Teams: The Secretary of Defense has directed that the Department perform as many acquisition functions as possible, including oversight and review, using IPTs. These IPTs shall function in a spirit of teamwork with participants empowered and authorized, to the maximum extent possible, to make commitments for the organization or the functional area they represent. IPTs are composed of representatives from all appropriate functional disciplines working together to build successful programs and enabling decision-makers to make the right decisions at the right time.

Joint Program Management: Any acquisition system, subsystem, component, or technology program that involves a strategy that includes funding by more than one DoD Component during any phase of a system's life cycle shall be defined as a joint program. Joint programs shall be consolidated and collocated at the location of the lead Componentis program office, to the maximum extent practicable.

Live Fire Test and Evaluation (LFT&E): LFT&E must be conducted on a covered system, major munition program, missile program, or product improvement to a covered system, major munition program, or missile program before it can proceed beyond low-rate initial production. A covered system is any vehicle, weapon platform, or conventional weapon system that includes features designed to provide some degree of protection to users in combat and that is an ACAT I or II program. Depending upon its intended use, a commercial or non-developmental item may be a covered system, or a part of a covered system. (Change 4, 5000.2-R) Systems requiring LFT&E may not proceed beyond low-rate initial production until realistic survivability or lethality testing is completed and the report required by statute is submitted to the prescribed congressional committees.

Low-Rate Initial Production (LRIP): The objective of this activity is to produce the minimum quantity necessary to: provide production configured or representative articles for operational tests, establish an initial production base for the system; and permit an orderly increase in the production rate for the system, sufficient to lead to full-rate production upon successful completion of operational testing.

Major Automated Information System (MAIS) Acquisition Program: An AIS acquisition program that is (1) designated by ASD (C3I) as a MAIS, or (2) estimated to require program costs in any single year in excess of 30 million in fiscal year (FY) 1996 constant dollars, total program costs in excess of 120 million in FY 1996 constant dollars, or total life-cycle costs in excess of 360 million in FY 1996 constant dollars. MAISs do not include highly sensitive classified programs.

Major Defense Acquisition Program (MDAP): An acquisition program that is not a highly sensitive classified program (as determined by the Secretary of Defense) and that is: (1) designated by the Under Secretary of Defense (Acquisition and Technology) (USD (A&T)) as an MDAP, or (2) estimated by the USD (A&T) to require an eventual total expenditure for research, development, test and evaluation of more than 355 million in fiscal year (FY) 1996 constant dollars or, for procurement, of more than 2.135 billion in FY 1996 constant dollars.

Major Milestone: A major milestone is the decision point that separates the phases of an acquisition program. MDAP milestones include, for example, the decisions to authorize entry into the engineering and manufacturing development phase or full rate production. MAIS milestones may include, for example, the decision to begin program definition and risk reduction.

Major System: A combination of elements that shall function together to produce the capabilities required to fulfill a mission need, including hardware, equipment, software, or any combination thereof, but excluding construction or other improvements to real property. A system shall be considered a major system if it is estimated by the DoD Component Head to require an eventual total expenditure for RDT&E of more than 135 million in FY 1996 constant dollars, or for procurement of more than 640 million in FY 1996 constant dollars, or if designated as major by the DoD Component Head.

Milestone Decision Authority (MDA): The individual designated in accordance with criteria established by the USD (A&T), or by the ASD (C3I) for AIS acquisition programs, to approve entry of an acquisition program into the next phase.

Modifications: Any modification that is of sufficient cost and complexity that it could itself qualify as an ACAT I or ACAT IA program shall be considered for management purposes as a separate acquisition effort. Modifications that do not cross the ACAT I or IA threshold shall be considered part of the program being modified, unless the program is no longer in production. In that case, the modification shall be considered a separate acquisition effort. (Added from 5000.2-R)

Operational Support: The objectives of this activity are the execution of a support program that meets the threshold values of all support performance requirements and sustainment of them in the most life-cycle cost-effective manner. A follow-on operational testing program that assesses performance and quality, compatibility, and interoperability, and identifies deficiencies shall be conducted, as appropriate. This activity shall also include the execution of operational support plans, to include the transition from contractor to organic support, if appropriate. (Added from 5000.2-R)

Operational Test and Evaluation (OT&E): OT&E shall be structured to determine the operational effectiveness and suitability of a system under realistic conditions (e.g., combat) and to determine if the operational performance requirements have been satisfied. The following procedures are mandatory: threat or threat representative forces, targets, and threat countermeasures, validated in coordination with DIA, shall be used; typical users shall operate and maintain the system or item under conditions simulating combat stress and peacetime conditions; the independent operational test activities shall use production or production representative articles for the dedicated phase of OT&E that supports the full-rate production decision, or for ACAT IA or other acquisition programs, the deployment decision; and the use of modeling and simulation shall be considered during test planning. There are more mandatory procedures (9 total) in 5000.2-R. Either include all mandatory procedures or rewrite the definition.

Patterns of Operation: Published by the Chairman of the Joint Chiefs of Staff in Spring, 1996, Joint Vision 2010 (JV2010) provides an operationally-based template for the development of U.S. military forces into the next century. It describes operational concepts which must be employed by joint forces in future conflicts. Army Vision 2010 (AV2010), published in Fall 1996, is a blueprint for how the Army will build the capabilities called for in JV2010. It articulates patterns of operation which align closely with the concepts of JV2010 and demonstrate the Army's view of its role in future joint operations. AV2010 patterns of operation include:

Project the Force: Projecting the force entails the rapid deployment of CONUS-based forces directly to crises. Transported by air and naval components of the joint task force, highly mobile and versatile Army forces represent a powerful deterrent to potential enemies and provide the means of defending our interests, should deterrence fail. Key enablers of effective force projection include prepositioned equipment, forward stationed forces, strategically mobile and lethal early entry forces, global C2 capabilities, and adequate strategic lift.

Protect the Force: Success in future operations will require freedom of deployment, reception, staging, onward movement, and maneuver. We must protect soldiers, equipment, facilities, and other critical elements of the joint force from enemy observation and attack across the full spectrum of operating environments. We must also protect essential information functions, to include key elements of our digital command and control structure, as we strive to achieve Information Dominance. Key enablers of force protection include improved intelligence and situational awareness, effective air and missile defense, effective NBC detection and defense, enhanced ballistic protection, increased maneuver speed and agility, and effective long-range engagement capabilities.

Gain Information Dominance: The Army will conduct information operations to achieve Information Dominance, which is essential to all other patterns of operation. Information Dominance provides an operational advantage to friendly forces by enabling enhanced situational and battlespace awareness. It enables the secure and effective functioning of the Army's digital command and control architecture. Simultaneously, achievement of Information Dominance by friendly forces allows the disruption of enemy C2, intelligence collection, and other critical information functions.

Shape the Battlespace: Successfully shaping the battlespace is closely associated with Decisive Operations in that it provides the conditions for mission success. It is the integration of various combat multipliers—deception, psychological operations, limited attacks, information warfare, mobility/ countermobility operations, precision strikes, and others—with the scheme of maneuver to overwhelm the enemy. It denies the enemy freedom of action and key capabilities while preserving those of friendly forces.

Conduct Decisive Operations: Decisive operations are the means by which we ultimately achieve success in that they compel an adversary to accede to our will. They may be defined in terms of victorious battles or campaigns for combat operations, or the achievement of politico-military objectives in operations other than war. Future decisive operations will be facilitated by situational awareness, heightened speed and agility, employment of precision munitions, and attainment of information dominance.

Sustain the Force: Successful sustainment is a critical element of any military operation, and as such, Sustain the Force is central to all other patterns of operation. Conversely, effective sustainment operations could be an objective in and of themselves, as in some humanitarian assistance operations. Future sustainment operations will be enhanced by the integration of information technologies, flexible and agile combat service support organizations, and new doctrinal concepts to provide rapid and effective logistics support to across the full spectrum of operational environments.

For additional information on acquisition terms, or terms not defined, please refer to:

AR 70-1, *Army Acquisition Policy*, or

DA PAM 70-3, *Army Acquisition Procedures.*

TOP FIFTY ARMY CONTRACTORS–FY98 RANKING

1. Raytheon
Advanced Threat Infrared Countermeasures (ATIRCM)
Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
Army Data Distribution System (ADDS)–EPLRS
Army TACMS Block II/BAT
Advanced Field Artillery Tactical Data System (AFATDS)
Advanced Tank Armament System (ATAS)
Battlefield Combat Identification System (BCIS)
Combat Identification for the Dismounted Soldier (CIDDS)
Driver's Vision Enhancer (DVE)
Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family
Firefinder (AN/TPQ-47)
Force XXI Battle Command Brigade-and-Below (FBCB2)
Guardrail/Common Sensor (GR/CS)
High Energy Laser System Test Facility (HELSTF)
Javelin
Joint LACMD Elevated Netted Sensors Systems (JLENS)
Joint Tactical Terminal (JTT)
Land Warrior (LW)
Long Range Advanced Scout Surveillance System (LRAS3)
MILSATCOM–EHF
MILSATCOM–UHF/SHF/TACSAT
National Missile Defense (NMD)
Patriot
Second Generation Forward Looking Infrared (FLIR)
Sentinel
Stinger
Suite of Integrated Radio Frequency Countermeasures (SIRFC)
Theater High Altitude Area Defense (THAAD) System
Thermal Weapon Sight (TWS)
TOW Improved Target Acquisition System (ITAS)

2. Lockheed Martin
All Source Analysis System (ASAS)
Apache Longbow
Army TACMS Block I/IA
Army TACMS Block II/BAT
Close Combat Tactical Trainer (CCTT)
Combat Identification for the Dismounted Soldier (CIDDS)
Combat Service Support Control System (CSSCS)
Global Command and Control System–Army (GCCS)
Guardrail/Common Sensor (GR/CS)
Guided Multiple Launch Rocket System (GMLRS)
High Mobility Artillery Rocket System (HIMARS)
Javelin
Joint Biological Point Detection System (JBPDS)
Joint Tactical Ground Station (JTAGS)
Line of Sight Anti-Tank (LOSAT)
Longbow HELLFIRE
Maneuver Control System (MCS)
Mortar (120 mm)
Multiple Launch Rocket System (MLRS)
Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW)
National Missile Defense (NMD)
Night Vision (NV) Image Intensification (I2)
Patriot
Theater High Altitude Area Defense (THAAD) System
Advanced Threat Infrared Countermeasures (ATIRCM)
Mortar (120 mm)
Medium Extended Air Defense System (MEADS)
Standard Army Management Information Systems (STAMIS)
Longbow HELLFIRE

3. Boeing
Apache Longbow
Avenger
Bradley Linebacker
CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Comanche
Grenadier Beyond Line-of-Sight Reporting (BRAT) (GB) (WRAP Candidate)
Kiowa Warrior
National Missile Defense (NMD)

4. The Carlyle Group

5. General Dynamics
Abrams
Advanced Field Artillery Tactical Data System (AFATDS)
Advanced Tank Armament System (ATAS)
Battlefield Combat Identification System (BCIS)
Combat Service Support Control System (CSSCS)
Common Hardware Systems (CHS) CHS-2
HYDRA 70 Rocket System
Integrated System Control (ISYSCON)
Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)
Maneuver Control System (MCS)
Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–FOX
Smoke Generator (M56 Coyote)
THSDN (WRAP Candidate)
Warfighter Information Network–Terrestrial (WIN-T) Switches
Warfighter Information Network–Terrestrial (WIN-T) Tech Insertion
Wolverine

6. Science Applications International Corporation

7. International Telephone & Telegraph
Army Data Distribution System (ADDS)–NTDRS
Night Vision (NV) Image Intensification (I2)
Single Channel Ground and Airborne Radio System (SINCGARS)
Suite of Integrated Radio Frequency Countermeasures (SIRFC)

8. GTE

9. United Technologies Corporation
Black Hawk

10. Northrop Grumman
Apache Longbow
Army TACMS Block II/BAT
Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Integrated Family of Test Equipment (IFTE)
Joint Surveillance Target Attack Radar (Joint STARS) Common Ground Station (CGS)
Longbow HELLFIRE
Tactical Endurance Synthetic Aperture Radar (TESAR)

11. Longbow Limited Liability Corporation (Lockheed Martin/Northrop Grumman)
Longbow HELLFIRE

12. TRW
Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
Battlefield Combat Identification System (BCIS)
Combat Service Support Control System (CSSCS)
Firefinder (AN/TPQ-47)
Force XXI Battle Command Brigade-and-Below (FBCB2)
Forward Air Defense Command, Control and Intelligence (FAADC2I)
Guardrail/Common Sensor (GR/CS)
Joint Collection Management Tools (JCMT)
Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS)
National Missile Defense (NMD)
Tactical High Energy Laser (THEL)

13. Computer Sciences Corporation
Standard Army Management Information Systems (STAMIS)

14. The Renco Group

15. Alliant Techsystems
HYDRA 70 Rocket System
Objective Individual Combat Weapon (OICW)
Selectable Lightweight Attack Munition (SLAM)
Tank Main Gun Ammunition

16. Primex
Excalibur 155mm Extended Range Artillery Projectile Family
HYDRA 70 Rocket System
Tank Main Gun Ammunition

17. Halliburton

18. Textron
Armored Security Vehicle (ASV)
Hornet
Kiowa Warrior

19. IT Group

20. Boeing Sikorsky Comanche Team
Comanche

21. Texas Instruments/Lockheed Martin Joint Venture
Javelin

22. AlliedSignal
CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Comanche
Mortar (120 mm)

23. Mitre
All Source Analysis System (ASAS)

24. Dyncorp

25. Stewart and Stevenson Services
Family of Medium Tactical Vehicles (FMTV)

26. Federal Republic of Germany

27. Litton
Advanced Threat Infrared Countermeasures (ATIRCM)
Common Hardware Systems (CHS) (LCU)
Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Lightweight Laser Designator Rangefinder (LLDR)
Night Vision (NV) Image Intensification (I2)

28. Motorola
Combat Identification for the Dismounted Soldier (CIDDS)
Joint Surveillance Target Attack Radar (Joint STARS)
Common Ground Station (CGS)
Tactical Operations Centers (TOCs)

29. General Electric
Advanced Threat Infrared Countermeasures (ATIRCM)
Black Hawk
Joint Chemical Agent Detector (JCAD)
Suite of Integrated Radio Frequency Countermeasures (SIRFC)

30. Olin

31. Oshkosh Truck
Forward Repair System (FRS) (WRAP Candidate)
Heavy Equipment Transporter System (HETS)
Palletized Load System (PLS)

32. Bell Atlantic

33. Nichols Research

34. Bechtel Group

35. Electronic Data Systems
Standard Army Management Information Systems (STAMIS)

36. Dames & Moore

37. Allegheny Teledyne

38. Harbert, Bill International

39. Philipp Holzmann Aktiengesells

40. Harris

41. Hensel Phelps Construction

42. Colsa

43. Telos
Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)

44. Young and Rubicam

45. Texas Instruments
Hornet

46. Day & Zimmerman

47. Blackstone Dredging Partners

48. SCH Health Care System

49. Booz Allen & Hamilton

50. Hercules
Hornet

CONTRACTORS WITH ≥ 5% OF CONTRACT VALUE

Abrams
General Dynamics: Lima, OH; Muskegon, MI; Scranton, PA; Sterling Heights, MI; Tallahassee, FL; Warren, MI

Advanced Field Artillery Tactical Data System (AFATDS)
General Dynamics: Taunton, MA
Raytheon: Fort Wayne, IN

Advanced Tank Armament System (ATAS)
Benet Labs: Watervliet Arsenal, NY
General Dynamics: Sterling Heights, MI
Raytheon: Plano, TX
Rheinmetall: Ratingen, Germany

Advanced Threat Infrared Countermeasures (ATIRCM)
Agility: Ayer, MA
Composite Optics: San Diego, CA
Crystal Associates: E. Hanover, NJ
Fairview Machine: Topsfield, MA
General Electric: Mojave, CA
Hughes: Goleta, CA
Litton: Apopka, FL
Lockheed Martin: Milpitas, CA; Nashua, NH
Raytheon: Midland, Ontario, Canada

Air Warrior
Arthur D. Little: Cambridge, MA
Foster-Miller: Waltham, MA
Program Integrator, Project Management Office, Aircrew Integrated Systems (PM ACIS): Huntsville, AL
Reynolds: Los Angeles, CA

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
APC: Austin, TX
Brown International: Huntsville, AL
Intergraph: Huntsville, AL
TRW: Huntsville, AL

Airborne Reconnaissance Low (ARL)
California Microwave: Belcamp, MD

All Source Analysis System (ASAS)
Electronic Warfare Associates: Herndon, VA
Lockheed Martin: Littleton, CO
Logicon: Arlington, VA
MANTECH: Killeen, TX
MITRE: McLean, VA
Sterling Software: Vienna, VA
Sytex: McLean, VA

Anti-personnel Landmine Alternative Program (APL-A)
To be determined

Apache Longbow
Boeing: Mesa, AZ
Lockheed Martin: Orlando, FL
Northrop Grumman: Linthincum, MD

Armored Security Vehicle (ASV)
Textron: New Orleans, LA

Army Airborne Command and Control System (A2C2S)
To be determined

Army Data Distribution System (ADDS)–Link-16-MIDS
MIDSCO: Consisting of Marconi Aerospace (Fairfield, NJ); Thomson-CSF (France); MID (Italy); DASA (Germany); INDRA (Spain)

Army Data Distribution System (ADDS)–EPLRS
Raytheon: Forrest, MS; Fort Wayne, IN; Fullerton, CA

Army Data Distribution System (ADDS)–Link-16-JTIDS
BAE Systems: Wayne, NJ

Army Data Distribution System (ADDS)-NTDRS
International Telephone and Telegraph (ITT): Clifton, NJ; Fort Wayne, IN

Army Key Management Systems (AKMS)
Group Technology Corporation: Tampa, FL

Army TACMS Block I/IA
Atlantic Research Corp: Camden, AR
B.F. Goodrich: Cedar Knolls, NJ
Lockheed Martin: Dallas, TX; Horizon City, TX

Army TACMS Block II/BAT
B. F. Goodrich: Cedar Knolls, NJ
Honeywell: Clearwater, FL
Lockheed Martin: Dallas, TX; Horizon City, TX
Northrop Grumman: Hawthorne, CA; Huntsville, AL
Raytheon: Tucson, AZ
Talley Defense Systems: Mesa, AZ

Automatic Chemical Agent Detector/Alarm (ACADA)
Graseby Dynamics: Watford, United Kingdom

Avenger
Boeing: Huntsville, AL

Battlefield Combat Identification System (BCIS)
EMS: Atlanta, GA
General Dynamics: Sterling Heights, MI
Raytheon: Fort Wayne, IN
TRW: Dominguez Hills, CA
United Defense, L.P.: San Jose, CA

Biological Vaccine Program/ Joint Vaccine Acquisition Program (JVAP)
DynPort LLC: Reston, VA

Black Hawk
General Electric: Lynn, MA
GNK Westland: Tallassee, AL
United Technologies: Stratford, CT

Bradley Fire Support Team (BFIST) Vehicle
United Defense, L.P.: York, PA

Bradley Linebacker
Boeing: Huntsville, AL
United Defense, L.P.: York, PA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
United Defense, L.P.: Arlington, VA; Fayette, PA; San Jose, CA; York, PA

CH-47 Chinook/Improved Cargo Helicopter (ICH)
Allied Signal: Greer, SC; Phoenix, AZ
Boeing: Philadelphia, PA
Robertson Aviation: Tempe, AZ

Close Combat Tactical Trainer (CCTT)
Lockheed Martin: Orlando, FL

Comanche
Allied Signal/Rolls Royce: Indianapolis, IN
Boeing and Sikorsky Team: Philadelphia, PA; Stratford, CT

Combat Identification for the Dismounted Soldier (CIDDS)
Lockheed Martin: Orlando, FL
Motorola: Scottsdale, AZ
Raytheon: El Segundo, CA

Combat Service Support Control System (CSSCS)
General Dynamics: Taunton, MA
Lockheed Martin: Springfield, VA
TRW: Carson, CA

Command and Control Vehicle (C2V)
United Defense, L.P.: Rosslyn, VA

Common Hardware Systems (CHS) (LCU)
Litton: San Diego, CA

Common Hardware Systems (CHS) CHS-2
General Dynamics: Taunton, MA

Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set (CHATS)
Engineering Systems Solutions: Frederick, MD
Sterling Software: Sierra Vista, AZ

Crusader
United Defense, L.P.: Minneapolis, MN

Deployable Medical Systems (DEPMEDS)
Defense Logistics Agency Defense Depot: Ogden, UT
Defense Service Center: Philadelphia, PA
Keco Industries: Florence, KY
North American Drager: Teleford, PA
Soldier System Support: Natick, MA

Digital Topographic Support System (DTSS) (WRAP Candidate)
Litton/TASC: Reston, VA
Sechan Electronics: Lititz, PA
SFA: Frederick, MD

Driver's Vision Enhancer (DVE)
Raytheon: Dallas, TX

Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family
Primex: St. Petersburg, FL
Raytheon: Tucson, AZ

Family of Medium Tactical Vehicles (FMTV)
Stewart and Stevenson Services: Houston, TX

Firefinder (AN/TPQ-36(V)8 and AN/TPQ-37)
Barco: Duluth, GA
Donaldson: Minneapolis, MN
Litton: San Diego, CA
Northrop Grumman: Baltimore, MD; Benton Park, PA; Chicago, IL

Firefinder (AN/TPQ-47)
Raytheon: El Segundo, CA; Forrest, MS; Fort Wayne, IN
TRW: Carson, CA

Force Provider (FP)
Anchor Industries: Evansville, IN
Defense Distribution Depot: Albany, GA
Keco Industries: Florence, KY
UNICOR: Lompoc, CA
WESTAR: St. Louis, MO

Force XXI Battle Command Brigade-and-Below (FBCB2)
Raytheon: El Segundo, CA
TRW: Carson, CA

Forward Air Defense Command, Control and Intelligence (FAADC2I)
TRW: Redondo Beach, CA

Forward Repair System (FRS) (WRAP Candidate)
Oshkosh Truck: Oshkosh, WI
Rock Island Arsenal: Rock Island, IL

Global Command and Control System–Army (GCCS)
Lockheed Martin: Springfield, VA

Global Positioning System (GPS)
Rockwell Collins: Cedar Rapids, IA
Trimble Navigation: Sunnyvale, CA

Grenadier Beyond Line-of-Sight Reporting (BRAT) (GB) (WRAP Candidate)
Boeing: Anaheim, CA

Grizzly
United Defense, L.P.: York, PA

Guardrail/Common Sensor (GR/CS)
L3 Communications: Salt Lake City, UT
Lockheed Martin: Owego, NY
Raytheon : Wichita, KS
Systems and Electronics: St. Louis, MO
TRW: Sunnyvale, CA

Guided Multiple Launch Rocket System (GMLRS)
Lockheed Martin: Dallas, TX

Heavy Equipment Transporter System (HETS)
Oshkosh Truck: Oshkosh, WI
Systems and Electronics: St. Louis, MO

Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)
Oshkosh Truck: Oshkosh, WI

Hercules
United Defense, L.P.: York, PA

High Energy Laser System Test Facility (HELSTF)
Logicon: San Pedro, CA
Mevatec: Las Cruces, NM
Raytheon: Las Cruces, NM
TRESCO: Las Cruces, NM

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Camden, AR; Dallas, TX

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
AM General: South Bend, IN

Hornet
American Ordnance: Burlington, IA
Eagle Pitcher: Joplin, MO
Hercules: West, VA
Hughes: Fullerton, CA
OPTO Electronics: Petaluma, CA
Texas Instruments: Dallas, TX
Textron: Wilmington, MA

HYDRA 70 Rocket System
Action Manufacturing: Philadelphia, PA
Alliant Techsystems: Radford, VA
DRI/CMS: Anniston, AL
Gayston Corporation: Springboro, OH
General Dynamics: Burlington, VT
International Custom Products: Scarborough, Ontario, Canada
Primex: Camden, AR
Quantic: Hollister, CA
Thiokol Propulsion: Brigham City, UT
Woodlawn Manufacturing: Marshall, TX

Integrated Family of Test Equipment (IFTE)
Miltope: Hope Hull, AL
Northrop Grumman: Rolling Meadows, IL
Tec-Masters: Huntsville, AL

Integrated Meteorological System (IMETS)
Logicon: Tacoma, WA
Physical Sciences Laboratory Software Engineering (New Mexico State University): Las Cruces, NM

Integrated System Control (ISYSCON)
General Dynamics: Raleigh, NC; Taunton, MA

Interim Armored Vehicle (IAV)
To be determined

Javelin
Lockheed Martin: Orlando, FL
Raytheon: Tucson, AZ

Joint Biological Point Detection System (JBPDS)
Battelle: Columbus, OH
Lockheed Martin : Glendale, CA
MIT Lincoln Laboratories: Lexington, MA

Joint Chemical Agent Detector (JCAD)
BAE Systems: Austin, TX

Joint Collection Management Tools (JCMT)
TRW: Fair Lakes, VA

Joint LACMD Elevated Netted Sensors Systems (JLENS)
Raytheon: Bedford, MA; El Segundo, CA

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Battelle: Stafford, VA
Creative Apparel: Belfast, ME
Group Home Foundation: Belfast, ME
NCED: El Paso, TX
Trade Winds: Gary, IN

Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System (JSLNBCRS)
TRW: Carson, CO

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
Intellitec: Deland, FL

Joint Surveillance Target Attack Radar (Joint STARS) Common Ground Station (CGS)
CUBIC Defense Systems: San Diego, CA
Motorola: Scottsdale, AZ
Northrop Grumman: Melbourne, FL

Joint Tactical Ground Station (JTAGS)
GenCorp (Aerojet): Colorado Springs, CO; Azuza, CA
Lockheed Martin: Boulder, CO; Sunnyvale, CA

Joint Tactical Terminal (JTT)
Raytheon: St. Petersburg, FL

Joint Transport Rotorcraft (JTR)
To be determined

Joint Warning and Reporting Network (JWARN) Block I
Bruhn Newtech: Columbia, MD

Joint Warning and Reporting Network (JWARN) Block II
To be determined

Kiowa Warrior
Boeing: Anaheim, CA
Honeywell: Albuquerque, NM
Rolls Royce/Allison Engines: Indianapolis, IN
Simula: Tempe, AZ
Textron: Fort Worth, TX

Land Warrior (LW)
Exponent: Menlo Park, CA
Raytheon: El Segundo, CA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)
General Dynamics: Taunton, MA
Litton: San Diego, CA
TELOS: Lawton, OK

Lightweight Laser Designator Rangefinder (LLDR)
Litton: Apopka, FL

Line of Sight Anti-Tank (LOSAT)
Lockheed Martin: Dallas, TX

Long Range Advanced Scout Surveillance System (LRAS3)
DRS Technologies: Torrance, CA
Raytheon: McKinney, TX

Longbow HELLFIRE
Lockheed Martin: Nashua, NH; Orlando, FL
Northrop Grumman: Bethesda, MD; Huntsville, AL
Stellex: Palo Alto, CA

M113 Family of Vehicles (FOV)
Anniston Army Depot: Anniston, AL
United Defense, L.P.: Anniston, AL

Maneuver Control System (MCS)
General Dynamics: Taunton, MA
Lockheed Martin: Tinton Falls, NJ

Medium Extended Air Defense System (MEADS)
MEADS International was selected as the prime contractor to continue MEADS development during the Risk Reduction Effort. This consortium comprises Lockheed Martin (U.S.), Alenia-Marconi (Italy), and DaimlerChrysler Aerospace (Germany).

MILSATCOM–EHF
Lincoln Labs: Lexington, MA
Rockwell Collins: Richardson, TX
Raytheon: Largo, FL; Marlborough/Sudbury, MA; Virginia Beach, VA

MILSATCOM-UHF/SHF/TACSAT
Raytheon: Largo, FL; Marlborough/Sudbury, MA; Reston, VA; Fort Wayne, IN

Mortar (120 mm)
AlliedSignal: Teterboro, NJ
American Ordnance: Milan, TN
Chamberlain Manufacturing: Scranton, PA
KDI: Cincinnati, OH
Lockheed Martin: Orlando, FL
Pine Bluff Arsenal: Pine Bluff, AR
Pocal Industries: Scranton, PA
SNC: Le Gardeur, Quebec, Canada
Valentec Systems: Mt. Arlington, NJ

Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW)
Lockheed Martin: Orlando, FL

Multiple Launch Rocket System (MLRS)
Lockheed Martin: Dallas, TX

National Missile Defense (NMD)
Boeing: Huntsville, AL
Lockheed Martin: Sunnyvale, CA
Raytheon: Bedford, MA; Tucson, AZ
TRW: Huntsville, AL

Night Vision (NV) Image Intensification (I2)
BAE Systems: Austin, TX
International Telephone and Telegraph (ITT): Roanoke, VA
Litton: Garland, TX; Tempe, AZ
Lockheed Martin: Nashua, NH; Orlando, FL
Phototelesis: San Antonio, TX

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–FOX
Anniston Army Depot: Anniston, AL
General Dynamics: Sterling Heights, MI; Anniston, AL
Henschel Wehrtechnik: Kassel, Germany

Objective Individual Combat Weapon (OICW)
Alliant Techsystems: Hopkins, MN

Paladin
United Defense, L.P.: York, PA

Palletized Load System (PLS)
Aeronautical Radio (ARINC): Colorado Springs, CO
COMTECH: Germantown, MD
Hyundai Precision America: San Diego, CA
Oshkosh Truck: Bradenton, FL; Oshkosh, WI
Summa Technologies: Huntsville, AL

Patriot
Lockheed Martin: Dallas, TX
Raytheon: Bedford, MA

Profiler
To be determined

Prophet
Delfin Systems (PG Block I Development): Santa Clara, CA

Reverse Osmosis Water Purification Unit (ROWPU)
Keco Industries: Florence, KY

Second Generation Forward Looking Infrared (FLIR)
DRS Technologies: El Segundo, CA; Palm Bay, FL
Raytheon: McKinney, TX

Selectable Lightweight Attack Munition (SLAM)
Alliant Techsystems: Minneapolis, MN

Sense and Destroy Armor (SADARM)
GenCorp (Aerojet): Azuza, CA

Sentinel
Raytheon: El Segundo, CA; Forrest, MS

Single Channel Ground and Airborne Radio System (SINCGARS)
International Telephone and Telegraph (ITT): Ft. Wayne, IN

Small Arms
Colt's Manufacturing: Hartford, CT
FN Manufacturing: Columbia, SC
Saco Defense: Saco, ME

Smoke Generator (M56 Coyote)
General Dynamics: Westminster, MD

Soldier Support Systems
Aspen Systems: Marlboro, MA
Camel Manufacturing: Caryville, TN
Engineered Air Systems, Inc.: St. Louis, MO
Eureka!: Binghamton, NY
Guild Associates: Dublin, OH
Hunter Manufacturing: Solon, OH
Irvin Industries: Hope Mills, NC
Marion Composites: Marion, VA
Plastics Research Corporation: Santa Fe Springs, CA
Rock Island Arsenal: Rock Island, IL
SFA Frederick Manufacturing: Frederick, MD
Simula: Phoenix, AZ
Tobyhanna Army Depot: Scranton, PA

Standard Army Management Information Systems (STAMIS)
Computer Sciences Corporation: Morristown, NJ
COMTECH Mobile Datacom SCC: Germantown, MD
Electronic Data Systems (EDS): Fort Knox, KY; Herndon, VA
GRCI: McLean, VA
GTSI: Chantilly, VA
Lockheed Martin: Bethesda, MD
Savi Technology: Mountain View, CA
Symbol Technologies: Holtsville, NY

Standardized Integrated Command Post Systems (SICPS)
Camel Manufacturing: Caryville, TN
Gichner Shelter System: Dallastown, PA
RDA: Tacoma, WA
Tobyhanna Army Depot: Scranton, PA
United Defense, L.P.: San Jose, CA

Stinger
Raytheon: Tucson, AZ

Striker
Systems and Electronics: St. Louis, MO

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
EMS Technologies: Norcross, GA
General Electric: Lansdale, PA
International Telephone and Telegraph (ITT): Clifton, NJ
Raytheon: Newport Beach, CA
Reinhart: Mountain Home, PA
REMEC: San Diego, CA
Signal: Sunnyvale, CA
Triton Services: Easton, PA

Tactical Endurance Synthetic Aperture Radar (TESAR)
Northrop Grumman: Baltimore, MD

Tactical Exploitation System (TES)
Classified

Tactical High Energy Laser (THEL)
TRW: Redondo Beach, CA

Tactical High Speed Data Network (THSDN)
General Dynamics: Taunton, MA

Tactical Operations Centers (TOCs)
Motorola: Huntsville, AL

Tactical Quiet Generators (TQG)
Dewey Electronics: Oakton, NJ
Fermont: Bridgeport, CT
Goodman Ball: Menlo Park, CA
Keco Industries: Florence, KY
MCII Generator & Electric Company: Dallas, TX
Radian: Alexandria, VA

Tactical Simulation Interface Unit (TSIU) (WRAP Candidate)
Coleman Research Corporation: Huntsville, AL
Space and Missile Defense Battle Lab (SMDBL): Huntsville, AL

Tactical Unmanned Aerial Vehicle (TUAV)
AAI Corporation (Hunt Valley, MD)

Tank Main Gun Ammunition
Alliant Techsystems: Hopkins, MN; Clearwater, FL
Primex: St. Petersburg, FL

Theater High Altitude Area Defense (THAAD) System
Lockheed Martin: Sunnyvale, CA
Raytheon: Bedford, MA

Thermal Weapon Sight (TWS)
Raytheon: Dallas, TX

TOW Fire & Forget
To be determined

TOW Improved Target Acquisition System (ITAS)
Raytheon: McKinney, TX

Ultra Lightweight Camouflage Net Systems (ULCANS)
BAE Systems: Austin, TX

Warfighter Information Network–Terrestrial (WIN-T) Switches
General Dynamics: Taunton, MA

Warfighter Information Network–Terrestrial (WIN-T) Tech Insertion
General Dynamics: Taunton, MA
Canadian Marconi: Ville Saint-Laurent, Quebec, Canada

Wolverine
General Dynamics: Sterling Heights, MI
MAN GHH: Dusseldorf, Germany

XM777 Joint lightweight 155 mm Howitzer (LW155)
Vickers Shipbuilding & Engineering: United Kingdom

XM982 155mm Extended Range Artillery Projectile Family
Primex: St. Petersburg, FL

CONTRACTORS WITH ≥ 5% OF CONTRACT VALUE

ALABAMA

Air Warrior
Program Integrator, Project Management: Huntsville, AL

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
Brown International: Huntsville, AL
Intergraph: Huntsville, AL
TRW: Huntsville, AL

Army TACMS Block II/BAT
Northrop Grumman: Huntsville, AL

Avenger
Boeing: Huntsville, AL

Black Hawk
GNK Westland: Tallassee, AL

Bradley Linebacker
Boeing: Huntsville, AL

HYDRA 70 Rocket System
DRI/CMS: Anniston, AL

Integrated Family of Test Equipment (IFTE)
Miltope: Hope Hull, AL
Tec-Masters: Huntsville, AL

Longbow HELLFIRE
Northrop Grumman: Huntsville, AL

M113 Family of Vehicles (FOV)
Anniston Army Depot: Anniston, AL
United Defense, L.P.: Anniston, AL

National Missile Defense (NMD)
Boeing: Huntsville, AL
TRW: Huntsville, AL

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–FOX
Anniston Army Depot: Anniston, AL
General Dynamics: Anniston, AL

Palletized Load System (PLS)
Summa Technologies: Huntsville, AL

Tactical Operations Centers (TOCs)
Motorola: Huntsville, AL

Tactical Simulation Interface Unit (TSIU) (WRAP Candidate)
Coleman Research Corporation: Huntsville, AL
Space and Missile Defense Battle Lab: Huntsville, AL

ARKANSAS

Army TACMS Block I/IA
Atlantic Research Corp: Camden, AR

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Camden, AR

HYDRA 70 Rocket System
Primex: Camden, AR

Mortar (120 mm)
Pine Bluff Arsenal: Pine Bluff, AR

ARIZONA

Apache Longbow
Boeing: Mesa, AZ

Army TACMS Block II/BAT
Raytheon: Tucson, AZ
Talley Defense Systems: Mesa, AZ

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Allied Signal: Phoenix, AZ
Robertson Aviation: Tempe, AZ

Combat Identification for the Dismounted Soldier (CIDDS)
Motorola: Scottsdale, AZ

Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set
Sterling Software: Sierra Vista, AZ

Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family
Raytheon: Tucson, AZ

Javelin
Raytheon: Tucson, AZ

Joint Surveillance Target Attack Radar (Joint STARS) Common Ground Station (CGS)
Motorola: Scottsdale, AZ

Kiowa Warrior
Simula: Tempe, AZ

National Missile Defense (NMD)
Raytheon: Tucson, AZ

Night Vision (NV) Image Intensification (I2)
Litton: Tempe, AZ

Soldier Support Systems
Simula: Phoenix, AZ

Stinger
Raytheon: Tucson, AZ

CALIFORNIA

Advanced Threat Infrared Countermeasures (ATIRCM)
Composite Optics: San Diego, CA
General Electric: Mojave, CA
Hughes: Goleta, CA
Lockheed Martin: Milpitas, CA

Air Warrior
Reynolds: Los Angeles, CA

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
TRW: Redondo Beach, CA

Army Data Distribution System (ADDS)–EPLRS
Raytheon: Fullerton, CA

Army TACMS Block II/BAT
Northrop Grumman: Hawthorne, CA

Battlefield Combat Identification System (BCIS)
TRW: Dominguez Hills, CA
United Defense, L.P.: San Jose, CA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: San Jose, CA

Combat Identification for the Dismounted Soldier (CIDDS)
Raytheon: El Segundo, CA

Combat Service Support Control System (CSSCS)
TRW: Carson, CA

Common Hardware Systems (CHS) (LCU)
Litton: San Diego, CA

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Litton: San Diego, CA

Firefinder (AN/TPQ-47)
Raytheon: El Segundo, CA
TRW: Carson, CA

Force Provider (FP)
UNICOR: Lompoc, CA

Force XXI Battle Command Brigade-and-Below (FBCB2)
Raytheon: El Segundo, CA
TRW: Carson, CA

Forward Air Defense Command, Control and Intelligence (FAADC2I)
TRW: Redondo Beach, CA

Global Positioning System (GPS)
Trimble Navigation: Sunnyvale, CA

Grenadier Beyond Line-of-Sight Reporting (BRAT) (GB) (WRAP Candidate)
Boeing: Anaheim, CA

Guardrail/Common Sensor (GR/CS)
TRW: Sunnyvale, CA

High Energy Laser System Test Facility (HELSTF)
Logicon: San Pedro, CA

Hornet
Hughes: Fullerton, CA
OPTO Electronics: Petaluma, CA

HYDRA 70 Rocket System
Quantic: Hollister, CA

Joint Biological Point Detection System (JBPDS)
Lockheed Martin: Glendale, CA

Joint LACMD Elevated Netted Sensors Systems (JLENS)
Raytheon: El Segundo, CA

Joint Surveillance Target Attack Radar (Joint STARS) Common Ground Station (CGS)
CUBIC Defense Systems: San Diego, CA

Joint Tactical Ground Station (JTAGS)
GenCorp (Aerojet): Azuza, CA
Lockheed Martin: Sunnyvale, CA

Kiowa Warrior
Boeing: Anaheim, CA

Land Warrior (LW)
Exponent: Menlo Park, CA
Raytheon: El Segundo, CA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED
Litton: San Diego, CA

Long Range Advanced Scout Surveillance System (LRAS3)
DRS Technologies: Torrance, CA

Longbow HELLFIRE
Stellex: Palo Alto, CA

National Missile Defense (NMD)
Lockheed Martin: Sunnyvale, CA

Palletized Load System (PLS)
Hyundai Precision America: San Diego, CA

Prophet
Delfin Systems (PG Block I Development): Santa Clara, CA

Second Generation Forward Looking Infrared (FLIR)
DRS Technologies: El Segundo, CA

Sense and Destroy Armor (SADARM)
GenCorp (Aerojet): Azuza, CA

Sentinel
Raytheon: El Segundo, CA

Soldier Support Systems
Plastics Research Corporation: Santa Fe Springs, CA

Standard Army Management Information Systems (STAMIS)
Savi Technology: Mountain View, CA

Standardized Integrated Command Post Systems (SICPS)
United Defense, L.P.: San Jose, CA

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
Raytheon: Newport Beach, CA
REMEC: San Diego, CA
Signal: Sunnyvale, CA

Tactical High Energy Laser (THEL)
TRW: Redondo Beach, CA

Tactical Quiet Generators (TQG)
Goodman Ball: Menlo Park, CA

Theater High Altitude Area Defense (THAAD) System
Lockheed Martin: Sunnyvale, CA

COLORADO

All Source Analysis System (ASAS)
Lockheed Martin: Littleton, CO

Joint Service Lightweight Nuclear, Biological and Chemical Reconnaissance System
TRW: Carson, CO

Joint Tactical Ground Station (JTAGS)
GenCorp (Aerojet): Colorado Springs, CO
Lockheed Martin: Boulder, CO

Palletized Load System (PLS)
Aeronautical Radio (ARINC): Colorado Springs, CO

CONNECTICUT

Black Hawk
United Technologies: Stratford, CT

Small Arms
Colt's Manufacturing: Hartford, CT

Tactical Quiet Generators (TQG)
Fermont: Bridgeport, CT

FLORIDA

Abrams
General Dynamics: Tallahassee, FL

Advanced Threat Infrared Countermeasures (ATIRCM)
Litton: Apopka, FL

Apache Longbow
Lockheed Martin: Orlando, FL

Army Key Management Systems (AKMS)
Group Technology Corporation: Tampa, FL

Army TACMS Block II/BAT
Honeywell: Clearwater, FL

Close Combat Tactical Trainer (CCTT)
Lockheed Martin: Orlando, FL

Combat Identification for the Dismounted Soldier (CIDDS)
Lockheed Martin: Orlando, FL

Javelin
Lockheed Martin: Orlando, FL

Excalibur 155mm Precision-Guided Extended-Range Artillery Projectile Family
Primex: St. Petersburg, FL

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
Intellitec: Deland, FL

Joint Surveillance Target Attack Radar (Joint STARS) Common Ground Station (CGS)
Northrop Grumman: Melbourne, FL

Joint Tactical Terminal (JTT)
Raytheon: St. Petersburg, FL

Lightweight Laser Designator Rangefinder (LLDR)
Litton: Apopka, FL

Longbow HELLFIRE
Lockheed Martin: Orlando, FL

MILSATCOM–EHF
Raytheon: Largo, FL

MILSATCOM–UHF/SHF/TACSAT
Raytheon: Largo, FL

Mortar (120 mm)
Lockheed Martin: Orlando, FL

Multi-Purpose Individual Munition/Short-Range Assault Weapon (MPIM/SRAW)
Lockheed Martin: Orlando, FL

Night Vision (NV) Image Intensification (I2)
Lockheed Martin: Orlando, FL

Palletized Load System (PLS)
Oshkosh Truck: Bradenton, FL

Second Generation Forward Looking Infrared (FLIR)
DRS Technologies: Palm Bay, FL

Tank Main Gun Ammunition
Alliant Techsystems: Clearwater, FL
Primex: St. Petersburg, FL

XM982 155mm Extended Range Artillery Projectile Family
Primex: St. Petersburg, FL

GEORGIA

Battlefield Combat Identification System (BCIS)
EMS: Atlanta, GA

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Barco: Duluth, GA

Force Provider (FP)
Defense Distribution Depot: Albany, GA

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
EMS Technologies: Norcross, GA

IOWA

Global Positioning System (GPS)
Rockwell Collins: Cedar Rapids, IA

Hornet
American Ordnance: Burlington, IA

ILLINOIS

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Northrop Grumman: Chicago, IL

Forward Repair System (FRS) (WRAP Candidate)
Rock Island Arsenal: Rock Island, IL

Integrated Family of Test Equipment (IFTE)
Northrop Grumman: Rolling Meadows, IL

Soldier Support Systems
Rock Island Arsenal: Rock Island, IL

INDIANA

Advanced Field Artillery Tactical Data System (AFATDS)
Raytheon: Fort Wayne, IN

Army Data Distribution System (ADDS)–EPLRS
Raytheon: Fort Wayne, IN

Army Data Distribution System (ADDS)–NTDRS
International Telephone and Telegraph (ITT): Fort Wayne, IN

Battlefield Combat Identification System (BCIS)
Raytheon: Fort Wayne, IN

Comanche
Allied Signal/Rolls Royce: Indianapolis, IN

Firefinder (AN/TPQ-47)
Raytheon: Fort Wayne, IN

Force Provider (FP)
Anchor Industries: Evansville, IN

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
AM General: South Bend, IN

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Trade Winds: Gary, IN

Kiowa Warrior
Rolls Royce/Allison Engines: Indianapolis, IN

MILSATCOM–UHF/SHF/TACSAT
Raytheon: Fort Wayne, IN

Single Channel Ground and Airborne Radio System (SINCGARS)
International Telephone and Telegraph (ITT): Ft. Wayne, IN

KANSAS

Guardrail/Common Sensor (GR/CS)
Raytheon: Wichita, KS

KENTUCKY

Deployable Medical Systems (DEPMEDS)
Keco Industries: Florence, KY

Force Provider (FP)
Keco Industries: Florence, KY

Reverse Osmosis Water Purification Unit (ROWPU)
Keco Industries: Florence, KY

Standard Army Management Information Systems (STAMIS)
Electronic Data Systems (EDS): Fort Knox, KY

Tactical Quiet Generators (TQG)
Keco Industries: Florence, KY

LOUISIANA

Armored Security Vehicle (ASV)
Textron: New Orleans, LA

MASSACHUSETTS

Advanced Field Artillery Tactical Data System (AFATDS)
General Dynamics: Taunton, MA

Advanced Threat Infrared Countermeasures (ATIRCM)
Agility: Ayer, MA
Fairview Machine: Topsfield, MA

Air Warrior
Arthur D. Little: Cambridge, MA
Foster-Miller: Waltham, MA

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
Raytheon: Bedford, MA

Black Hawk
General Electric: Lynn, MA

Combat Service Support Control System (CSSCS)
General Dynamics: Taunton, MA

Common Hardware Systems (CHS) CHS-2
General Dynamics: Taunton, MA

Deployable Medical Systems (DEPMEDS)
Soldier System Support: Natick, MA

Hornet
Textron: Wilmington, MA

Integrated System Control (ISYSCON)
General Dynamics: Taunton, MA

Joint Biological Point Detection System (JBPDS)
MIT Lincoln Laboratories: Lexington, MA

Joint LACMD Elevated Netted Sensors Systems (JLENS)
Raytheon: Bedford, MA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)
General Dynamics: Taunton, MA

Maneuver Control System (MCS)
General Dynamics: Taunton, MA

MILSATCOM–EHF
Lincoln Labs: Lexington, MA
Raytheon: Marlborough, MA

MILSATCOM–UHF/SHF/TACSAT
Raytheon: Marlborough, MA

National Missile Defense (NMD)
Raytheon: Bedford, MA

Patriot
Raytheon: Bedford, MA

Soldier Support Systems
Aspen Systems: Marlboro, MA

Theater High Altitude Area Defense (THAAD) System
Raytheon: Bedford, MA

Tactical High Speed Data Network (THSDN) (WRAP Candidate)
General Dynamics: Taunton, MA

Warfighter Information Network–Terrestrial (WIN-T) Switches
General Dynamics: Taunton, MA

Warfighter Information Network–Terrestrial (WIN-T) Tech Insertion
General Dynamics: Taunton, MA

MARYLAND

Airborne Reconnaissance Low (ARL)
California Microwave: Belcamp, MD

Apache Longbow
Northrop Grumman: Linthincum, MD

Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set (CHATS)
Engineering Systems Solutions: Frederick, MD

Digital Topographic Support System (DTSS) (WRAP Candidate)
SFA: Frederick, MD

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Northrop Grumman: Baltimore, MD

Joint Warning and Reporting Network (JWARN) Block I
Bruhn Newtech: Columbia, MD

Longbow HELLFIRE
Northrop Grumman: Bethesda, MD

Palletized Load System (PLS)
COMTECH: Germantown, MD

Smoke Generator (M56 Coyote)
General Dynamics: Westminster, MD

Soldier Support Systems
SFA Frederick Manufacturing: Frederick, MD

Standard Army Management Information Systems (STAMIS)
COMTECH Mobile Datacom SCC: Germantown, MD
Lockheed Martin: Bethesda, MD

Tactical Endurance Synthetic Aperture Radar (TESAR)
Northrop Grumman: Baltimore, MD

Tactical Unmanned Aerial Vehicle (TUAV)
AAI Corporation (Hunt Valley, MD)

MAINE

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Creative Apparel: Belfast, ME
Group Home Foundation: Belfast, ME

Small Arms
Saco Defense: Saco, ME

MICHIGAN

Abrams
General Dynamics: Muskegon, MI; Sterling Heights, MI; Warren, MI

Advanced Tank Armament System (ATAS)
General Dynamics: Sterling Heights, MI

Battlefield Combat Identification System (BCIS)
General Dynamics: Sterling Heights, MI

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–FOX
General Dynamics: Sterling Heights, MI

Wolverine
General Dynamics: Sterling Heights, MI

MINNESOTA

Crusader
United Defense, L.P.: Minneapolis, MN

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Donaldson: Minneapolis, MN

Objective Individual Combat Weapon (OICW)
Alliant Techsystems: Hopkins, MN

Selectable Lightweight Attack Munition (SLAM)
Alliant Techsystems: Minneapolis, MN

Tank Main Gun Ammunition
Alliant Techsystems: Hopkins, MN

MISSISSIPPI

Army Data Distribution System (ADDS)–EPLRS
Raytheon: Forrest, MS

Firefinder (AN/TPQ-47)
Raytheon: Forrest, MS

Sentinel
Raytheon: Forrest, MS

MISSOURI

Force Provider (FP)
WESTAR: St. Louis, MO

Guardrail/Common Sensor (GR/CS)
Systems and Electronics: St. Louis, MO

Heavy Equipment Transporter System (HETS)
Systems and Electronics: St. Louis, MO

Hornet
Eagle Pitcher: Joplin, MO

Soldier Support Systems
Engineered Air Systems: St. Louis, MO

Striker
Systems and Electronics:
St. Louis, MO

NORTH CAROLINA

Integrated System Control (ISYSCON)
General Dynamics: Raleigh, NC

Soldier Support Systems
Irvin Industries: Hope Mills, NC

NEW HAMPSHIRE

Advanced Threat Infrared Countermeasures (ATIRCM)
Lockheed Martin: Nashua, NH

Longbow HELLFIRE
Lockheed Martin: Nashua, NH

Night Vision (NV) Image Intensification (I2)
Lockheed Martin: Nashua, NH

NEW JERSEY

Advanced Threat Infrared Countermeasures (ATIRCM)
Crystal Associates: E. Hanover, NJ

Army Data Distribution System (ADDS)–Link-16-MIDS
MIDSCO: Fairfield, NJ

Army Data Distribution System (ADDS)–Link-16-JTIDS
BAE Systems: Wayne, NJ

Army Data Distribution System (ADDS)–NTDRS
International Telephone and Telegraph (ITT): Clifton, NJ

Army TACMS Block I/IA
B.F. Goodrich: Cedar Knolls, NJ

Army TACMS Block II/BAT
B. F. Goodrich: Cedar Knolls, NJ

Maneuver Control System (MCS)
Lockheed Martin: Tinton Falls, NJ

Mortar (120 mm)
AlliedSignal: Teterboro, NJ
Valentec Systems: Mt. Arlington, NJ

Standard Army Management Information Systems (STAMIS)
Computer Sciences Corporation:
Morristown, NJ

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
International Telephone and Telegraph (ITT): Clifton, NJ

Tactical Quiet Generators (TQG)
Dewey Electronics: Oakton, NJ

NEW MEXICO

High Energy Laser System Test Facility (HELSTF)
Mevatec: Las Cruces, NM
Raytheon: Las Cruces, NM
TRESCO: Las Cruces, NM

Integrated Meteorological System (IMETS)
Physical Sciences Laboratory
Software: Las Cruces, NM

Kiowa Warrior
Honeywell: Albuquerque, NM

NEW YORK

Advanced Tank Armament System (ATAS)
Benet Labs: Watervliet Arsenal, NY

Guardrail/Common Sensor (GR/CS)
Lockheed Martin: Owego, NY

Soldier Support Systems
Eureka!: Binghamton, NY

Standard Army Management Information Systems (STAMIS)
Symbol Technologies:
Holtsville, NY

OHIO

Abrams
General Dynamics: Lima, OH

HYDRA 70 Rocket System
Gayston Corporation:
Springboro, OH

Joint Biological Point Detection System (JBPDS)
Battelle: Columbus, OH

Mortar (120 mm)
KDI: Cincinnati, OH

Soldier Support Systems
Guild Associates: Dublin, OH
Hunter Manufacturing: Solon, OH

OKLAHOMA

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)
TELOS: Lawton, OK

PENNSYLVANIA

Abrams
General Dynamics: Scranton, PA

Bradley Fire Support Team (BFIST) Vehicle
United Defense, L.P.: York, PA

Bradley Linebacker
United Defense, L.P.: York, PA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
United Defense, L.P.: York, PA;
Fayette, PA

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Boeing: Philadelphia, PA

Comanche
Boeing: Philadelphia, PA

Deployable Medical Systems (DEPMEDS)
Defense Service Center:
Philadelphia, PA
North American Drager:
Teleford, PA

Digital Topographic Support System (DTSS) (WRAP Candidate)
Sechan Electronics: Lititz, PA

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Northrop Grumman:
Benton Park, PA

Grizzly
United Defense, L.P.: York, PA

Hercules
United Defense, L.P.: York, PA

HYDRA 70 Rocket System
Action Manufacturing:
Philadelphia, PA

Mortar (120 mm)
Chamberlain Manufacturing:
Scranton, PA
Pocal Industries: Scranton, PA

Paladin
United Defense, L.P.: York, PA

Soldier Support Systems
Tobyhanna Army Depot:
Scranton, PA

Standardized Integrated Command Post Systems (SICPS)
Gichner Shelter System:
Dallastown, PA

Tobyhanna Army Depot:
Scranton, PA

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
General Electric: Lansdale, PA
Reinhart: Mountain Home, PA
Triton Services: Easton, PA

SOUTH CAROLINA

CH-47 Chinook/Improved Cargo Helicopter (CH-47F)
Robertson Aviation: Greer, SC

Small Arms
FN Manufacturing: Columbia, SC

TENNESSEE

Mortar (120 mm)
American Ordnance: Milan, TN

Soldier Support Systems
Camel Manufacturing: Caryville, TN

Standardized Integrated Command Post Systems (SICPS)
Camel Manufacturing: Caryville, TN

TEXAS

Advanced Tank Armament System (ATAS)
Raytheon: Plano, TX

Air/Missile Defense Planning and Control System (AMDPCS) (WRAP Candidate)
APC: Austin, TX

All Source Analysis System (ASAS)
MANTECH: Killeen, TX

Army TACMS Block I/IA
Lockheed Martin: Dallas, TX;
Horizon City, TX

Army TACMS Block II/BAT
Lockheed Martin: Dallas, TX;
Horizon City, TX

Driver's Vision Enhancer (DVE)
Raytheon: Dallas, TX

Family of Medium Tactical Vehicles (FMTV)
Stewart and Stevenson Services:
Houston, TX

Guided Multiple Launch Rocket System (GMLRS)
Lockheed Martin: Dallas, TX

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin: Dallas, TX

Hornet
Texas Instruments: Dallas, TX

HYDRA 70 Rocket System
Woodlawn Manufacturing:
Marshall, TX

Joint Chemical Agent Detector (JCAD)
BAE Systems: Austin, TX

Joint Service Lightweight Integrated Suit Technology (JSLIST)
NCED: El Paso, TX

Kiowa Warrior
Textron: Fort Worth, TX

Line of Sight Anti-Tank (LOSAT)
Lockheed Martin: Dallas, TX

Long Range Advanced Scout Surveillance System (LRAS3)
Raytheon: McKinney, TX

MILSATCOM–EHF
Rockwell Collins: Richardson, TX

Multiple Launch Rocket System (MLRS)
Lockheed Martin: Dallas, TX

Night Vision (NV) Image Intensification (I2)
BAE Systems: Austin, TX
Litton: Garland, TX
Phototelesis: San Antonio, TX

Patriot
Lockheed Martin: Grand Prairie, TX

Second Generation Forward Looking Infrared (FLIR)
Raytheon: McKinney, TX

Tactical Quiet Generators (TQG)
MCII Generator & Electric
Company: Dallas, TX

Thermal Weapon Sight (TWS)
Raytheon: Dallas, TX

TOW Improved Target Acquisition System (ITAS)
Raytheon: McKinney, TX

Ultra Lightweight Camouflage Net Systems (ULCANS)
BAE Systems : Austin, TX

UTAH

Deployable Medical Systems (DEPMEDS)
Defense Logistics Agency Defense
Depot: Ogden, UT

Guardrail/Common Sensor (GR/CS)
L3 Communications:
Salt Lake City, UT

HYDRA 70 Rocket System
Thiokol Propulsion:
Brigham City, UT

VIRGINIA

All Source Analysis System (ASAS)
Electronic Warfare Associates:
Herndon, VA
Logicon: Arlington, VA
MITRE: McLean: VA
Sterling Software: Vienna, VA
Sytex: McLean: VA

Biological Vaccine Program/ Joint Vaccine Acquisition Program (JVAP)
DynPort LLC: Reston, VA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
United Defense, L.P.: Arlington, VA

Combat Service Support Control System (CSSCS)
Lockheed Martin: Springfield, VA

Command and Control Vehicle (C2V)
United Defense, L.P.: Arlington, VA

Digital Topographic Support System (DTSS) (WRAP Candidate)
Litton/TASC: Reston, VA

Global Command and Control System–Army (GCCS)
Lockheed Martin: Springfield, VA

Hornet
Hercules: West, VA

HYDRA 70 Rocket System
Alliant Techsystems: Radford, VA

Joint Collection Management Tools (JCMT)
TRW: Fair Lakes, VA

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Battelle: Stafford, VA

MILSATCOM-EHF
Raytheon: Virginia Beach, VA

MILSATCOM–UHF/SHF/TACSAT
Raytheon: Reston, VA

Night Vision (NV) Image Intensification (I2)
International Telephone and Telegraph (ITT): Roanoke, VA

Soldier Support Systems
Marion Composites: Marion, VA

Standard Army Management Information Systems (STAMIS)
Electronic Data Systems (EDS): Herndon, VA
GRCI: McLean, VA
GTSI: Chantilly, VA

Tactical Quiet Generators (TQG)
Radian: Alexandria, VA

VERMONT

HYDRA 70 Rocket System
General Dynamics: Burlington, VT

WASHINGTON

Integrated Meteorological System (IMETS)
Logicon: Tacoma, WA

Standardized Integrated Command Post Systems (SICPS)
RDA: Tacoma, WA

WISCONSIN

Forward Repair System (FRS) (WRAP Candidate)
Oshkosh Truck: Oshkosh, WI

Heavy Equipment Transporter System (HETS)
Oshkosh Truck: Oshkosh, WI

Heavy Expanded Mobility Tactical Truck–Load Handling System (HEMTT-LHS)
Oshkosh Truck: Oshkosh, WI

Palletized Load System (PLS)
Oshkosh Truck: Oshkosh, WI

OTHER COUNTRIES

CANADA

Advanced Threat Infrared Countermeasures (ATIRCM)
Raytheon: Midland, Ontario, Canada

HYDRA 70 Rocket System
International Custom Products: Scarborough, Ontario, Canada

Mortar (120 mm)
SNC: Le Gardeur, Quebec, Canada

Warfighter Information Network–Terrestrial (WIN-T) Tech Insertion
Canadian Marconi: Ville Saint-Laurent, Quebec, Canada

FRANCE

Army Data Distribution System (ADDS)–Link-16-MIDS
MIDSCO, Thomson-CSF: France

GERMANY

Army Data Distribution System (ADDS)–Link-16-MIDS
MIDSCO, DASA: Germany

Advanced Tank Armament System (ATAS)
Rheinmetall: Ratingen, Germany

Medium Extended Air Defense System (MEADS)
DaimlerChrysler Aerospace: Germany

Nuclear, Biological and Chemical Reconnaissance System (NBCRS)–FOX
Henschel Wehrtechnik: Kassel, Germany

Wolverine
MAN GHH: Dusseldorf, Germany

ITALY

Army Data Distribution System (ADDS)–Link-16-MIDS
MIDSCO, MID: Italy

Medium Extended Air Defense System (MEADS)
Alenia-Marconi: Italy

SPAIN

Army Data Distribution System (ADDS)–Link-16-MIDS
INDRA: Spain

UNITED KINGDOM

Automatic Chemical Agent Detector/Alarm (ACADA)
Graseby Dynamics: Watford, United Kingdom

XM777 Joint lightweight 155 mm Howitzer (LW155)
Vickers Shipbuilding & Engineering: United Kingdom

2000 WEAPON SYSTEMS POINTS-OF-CONTACT

Abrams
Abrams Tank System
Project Manager
ATTN: SFAE–GCSS-AB
Warren, MI 48397-5000

Advanced Field Artillery Tactical Data System (AFATDS)
AFATDS
Project Manager
ATTN: SFAE–C3-FS
Fort Monmouth, NJ 07703

Advanced Tank Armament System (ATAS)
Tank Main Armament Systems (PM-TMAS)
Project Manager
ATTN: SFAE–GCSS-TMA
Picatinny Arsenal, NJ 07806-5000

Advanced Threat Infrared Countermeasures AN ALQ-212 (ATIRCM)/Common Missile Warning System AN/AAR-57 (CMWS)
Project Manager
Advanced Threat Infrared Countermeasures (ATIRCM)/Common Missile Warning System (CMWS)/ASE
ATTN: SFAE–AV-IR
Wood Road
Redstone Arsenal, AL 35898

Air Warrior
Project Management Office, Aircrew Integrated Systems (PM ACIS)
Project Manager
Aviation
Redstone Arsenal, AL 35898

Air/Missile Defense Planning Control System (AMDPCS)
Air Defense Command and Control Systems (PM ADCCS)
Project Manager
ATTN: SFAE–C3S-AD
Redstone Arsenal, AL 35898-5600

Airborne Reconnaissance Low (ARL)
Signals Warfare
Project Manager
ATTN: SFAE–C3S-INT
Building 296, Main Post
Fort Monmouth, NJ 07703-5040

All Source Analysis System (ASAS)
Product Manager
Project Manager
ATTN: SFAE–C3S-INT
1616 Anderson Road
McLean, VA 22102-1616

Anti-personnel Landmine Alternative Program

Apache Longbow
Longbow Apache
Product Manager
ATTN: SFAE–AV-AAH
Building 5681
Redstone Arsenal, AL 35898

Armored Security Vehicle (ASV)
Light Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-LV
Warren, MI, 48397-5000

Army Airborne Command and Control System

Army Battle Command System (ABCS)

Army Data Distribution System (ADDS)–EPLRS/NTDRS
TRCS
Project Manager
ATTN: SFAE–C3S-TRC
Fort Monmouth, NJ 07703

Army Data Distribution System (ADDS)–JTIDS/MIDS
TRCS
Project Manager
ATTN: SFAE–C3S-TRC
Fort Monmouth, NJ 07703

Army Key Management System (AKMS)
Warfighter Information Network (Terrestrial) (PM WIN-T)
Project Manager
ATTN: SFAE–C3S-WIN
Building 744
Fort Monmouth, NJ 07703-5506

Army Tactical Missile System (ATACMS) Block II
Army TACMS
Project Manager
ATTN: SFAE–MSL-AB
Redstone Arsenal, AL 35898-5650

Army Tactical Missile System (ATACMS) Blocks I and IA
Army TACMS
Project Manager
ATTN: SFAE–MSL-AB
Redstone Arsenal, AL 35898-5650

Army Tactical Missile System (ATACMS)-BAT (All Variants)
Army TACMS-BAT
Project Manager
ATTN: SFAE–MSL-AB
Redstone Arsenal, AL 35898-5650

Automatic Chemical Agent Detector/Alarm (ACADA)
NBC Defense Systems
Project Manager
ATTN: AMSSB–PM-RNN
Aberdeen, MD 21010-5423

Avenger
U.S. Army Aviation and Missile Command
Attn: AMSAM–DSA-SH
Redstone Arsenal, AL 35898-5000

Battlefield Combat Identification System (BCIS)
Combat Identification
Product Manager
ATTN: SFAE–IEW-CI
Building 563 Avenue of Memories
Fort Monmouth, NJ 07703

Biological Vaccine Program/Joint Vaccine Acquisition Program (JVAP)
Joint Program Office for Biological Defense Systems
ATTN: SFAE–BD/Skyline
35201 Leesburg Pike
Falls Church, VA 22041-3203

Black Hawk
Utility Helicopters
Project Manager
U.S. Army Aviation and Missile Command
ATTN: AMSAM–DSA-UH
Building 5308
Redstone Arsenal, AL 35898

Bradley Fire Support Team (BFIST) Vehicle
Bradley Fire Support Team
Product Manager
ATTN: SFAE–GCSS-BV
Warren, MI 48397-5000

Bradley Linebacker
Bradley Linebacker
Product Manager
ATTN: SFAE–GCSS-BV
Warren, MI 48397-5000

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
Bradley Fighting Vehicle System
Product Manager
ATTN: SFAE–GCSS-W-BV
Warren, MI 48397-5000

CH-47D Chinook/Improved Cargo Helicopter (CH-47F)
Cargo Helicopters
Project Manager
ATTN: SFAE–AV-CH
Building 5681
Redstone Arsenal, AL 35898

Close Combat Tactical Trainer (CCTT)
Combined Arms Tactical Trainer
Project Manager
ATTN: AMSTI–CCTT
12350 Research Parkway
Orlando, FL 32826-3276

Comanche
Comanche
Project Manager
ATTN: SFAE–IEW-CID
Building 563 Avenue of Memories
Fort Monmouth, NJ 07703

Combat Identification for the Dismounted Soldier (CIDDS)
Combat Identification
Product Manager
ATTN: SFAE–IEW-CI
Building 563 Avenue of Memories
Fort Monmouth, NJ 07703

Combat Service Support Control System (CSSCS)
CSSCS
Product Manager
ATTN: SFAE–C3S-STR
6052 Meade Road, Suite 103
Fort Belvoir, VA 22060

Command and Control Vehicle (C2V)
Platforms
Product Manager
ATTN: SFAE–C3S-AT
Fort Monmouth, NJ 07703

Common Hardware Systems (CHS)
CHS
Product Manager
ATTN: SFAE–C3S-AT-CHS
Fort Monmouth, NJ 07703-5402

Counter Intelligence/Human Intelligence (CI/HUMINT) Automated Tools Set
Product Manager
ATTN: SFAE–C3S-INT
1616 Anderson Road
McLean, VA 22102-1616

Crusader
Crusader
Project Manager
ATTN: SFAE–GCSS-CR
Picatinny Arsenal, NJ 07806-5000

Deployable Medical Systems (DEPMEDS)
HQ, U.S. Army Aviation and Troop Command
ATTN: AMSAT–W-TV
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

U.S. Army Medical Material Agency
Office of the Surgeon
Project Manager
Attn: DASG–LOZ
5109 Leesburg Pike, Suite 668
Falls Church, VA 22041-3258

Digital Topographic Support System (DTSS) (WRAP candidate)
Combat Terrain Information Systems U.S. Army Topographic
Project Director
ATTN: CETEC–PD-T
7701 Telegraph Road
Alexandria, VA 22310-3864

Driver's Vision Enhancer (DVE)
NV/RSTA
Project Manager
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22310-3864

Excalibur 155 mm Precision-Guided Extended Range Artillery Projectile
Artillery Munition Systems
Project Manager
ATTN: SFAE–GCCS-ARMS
Picatinny Arsenal, NJ 07806-5000

Family of Medium Tactical Vehicles (FMTV)
FMTV
Project Manager
ATTN: SFAE–GCSS-W-MTV
Warren, MI 48397-5000

Firefinder (AN/TPQ-36 and AN/TPQ-37/Block II)
Firefinder
Project Manager
ATTN: AMSEL–DSA-FF
Fort Monmouth, NJ 07703

Firefinder (AN/TPQ-47)

Force Provider (FP)
Soldier Systems Center
Product Manager
ATTN: AMSSB–PM-RFP-E
100 Kansas Street
Natick, MA 01760

Force XXI Battle Command Brigade-and-Below (FBCB2)
Force XXI Battle Command Brigade and Below
Project Manager
ATTN: SFAE–C3S-FB
Building 2525
Fort Monmouth, NJ 07703-5408

Forward Area Air Defense Command, Control and Intelligence (FAADC2I)
ADCCS
Project Manager
ATTN: SFAE–C3S-AD
Redstone Arsenal, AL 35898

Forward Repair System (FRS) (WRAP Candidate)
Heavy Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-HT
Warren, MI 48397-5000

Global Command and Control System–Army (GCCS-A)
GCCS-A
Product Manager
ATTN: SFAE–C3S-STR
Fort Monmouth, NJ 07703

Global Positioning System (GPS)
GPS
Product Manager
ATTN: AMSEL–DSA-GPS
CECOM SMC
Fort Monmouth, NJ 07703

Grenadier Beyond Line-of-Sight Reporting (BRAT) (GB)
Army Space Program Office
Director
ATTN: SMDC–AO
7701 Telegraph Road
Building 2592A
Alexandria, VA 22315

Grizzly
Grizzly
Product Manager
ATTN: AMSTA–DSA-CM
Warren, MI 48397-5000

Guardrail/Common Sensor (GR/CS)
Signals Warfare
Project Manager
ATTN: SFAE–IEW&S-SG
Building 296, Main Post
Fort Monmouth, NJ 07703-5040

Guided Multiple Launch Rocket System (GMLRS)
Multiple Launch Rocket System
Project Manager
ATTN: SFAE–MSL-ML
Redstone Arsenal, AL 35898

Heavy Equipment Transporter System (HETS)
Heavy Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-HT
Warren, MI 48397-5000

Hercules
Hercules
Project Manager
ATTN: AMSTA–DSA-CM
Warren, MI 48397-5000

High Energy Laser System Test Facility (HELSTF)

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
Light Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-LT
Warren, MI 48397-5000

High Mobility Artillery Rocket System (HIMARS)
MLRS
Project Manager
ATTN: SFAE–MSL-ML
Redstone Arsenal, AL 35898

Hornet
Mines, Countermine and Demolitions
Project Manager
ATTN: AMSTA–DA-ME
Picatinny Arsenal, NJ 07806-5000

HYDRA 70 Rocket System
2.75 Inch Rocket Systems
U.S. Army Industrial Operations
Product Manager
ATTN: AMSIO–PM-R
Rock Island, IL 61299-6000

Integrated Family of Test Equipment (IFTE)
Automatic Test Support Systems
Product Manager
ATTN: AMSAM–DSA-TMDE-A
Redstone Arsenal, AL 35898-5400

Integrated Meteorological System (IMETS)
Army Research Laboratory
Director
ATTN: SFAE–C3S-MET
WSMR, NM 88002

Integrated System Control (ISYSCON)
Warfighter Information Network–Terrestrial (WIN-T)
Product Manager
ATTN: SFAE–C3S-WIN
Fort Monmouth, NJ 07703

Javelin
Javelin
Project Manager
ATTN: SFAE–MSL-AM
Redstone Arsenal, AL 35898-5720

Joint Biological Point Detection System (JBPDS)
NBC Defense
Joint Program Office for Biological Defense Systems
ATTN: SFAE–BD/Skyline #3
Falls Church, VA 22041-3203

Joint Chemical Agent Detector (JCAD)

Joint Collection Management Tools (JCMT)
Product Manager
ATTN: SFAE–C3S-INT
1616 Anderson Road
McLean, VA 22102-1616

Joint LACMD Elevated Netted Sensors System (JLENS)
U.S. Army Space and Missile Defense Command
Project Manager
P.O. Box 1500
Huntsville, AL 35807

Joint Service Lightweight Integrated Suit Technology (JSLIST)
JSLIST
Project Manager
10401 Totten Road
Suite 121
Fort Belvoir, VA 22060

Joint Service Lightweight Stand-off Chemical Agent Detector (JSLSCAD)
NBC Defense Systems
Project Manager
ATTN: AMSSB–PM-RNN
Aberdeen Proving Ground, MD 21010-5423

Joint Surveillance Target Attack Radar System (Joint STARS) Common
Joint STARS
Project Manager
ATTN: SFAE–IEW&S-JS
Fort Monmouth, NJ 07703-5304

Joint Tactical Ground Station (JTAGS)
Missile Defense
Program Executive Office
ATTN: SFAE–GPL-TMD-SS-P
P.O. Box 1500
Huntsville, AL 35807-3801

Joint Tactical Terminal (JTT)
JTT/CIBSM
Product Manager
ATTN: SFAE–IEW&S-JS
Fort Monmouth, NJ 07703-5304

Joint Warning and Reporting Network (JWARN)
NBC Defense
Project Manager
ATTN: CSLE–NBC
2033 Barnett Avenue, Suite 315
Quantico, MD 22134-5010

U.S. Marine Corps Systems Command (MARCORSYSCOM)
Project Manager
ATTN: CSLE–NBC
2033 Barnett Avenue, Suite 315
Quantico, MD 22134-5010

Kiowa Warrior
Kiowa Warrior
Product Manager
ATTN: AMSAM–DSA-AS-ASH
Building 5308, Sparkman Center
Redstone Arsenal, AL 35898

Land Warrior (LW)

Lightweight Forward Entry Device (LFED)/Forward Entry Device (FED)

Lightweight Laser Designator/Rangefinder (LLDR)
NV/RSTA
Project Manager
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

Line-of-Sight Anti-Tank (LOSAT)
LOSAT
Project Manager
ATTN: SFAE–ASM-LS
Redstone Arsenal, AL 35898-8051

Long Range Advanced Scout Surveillance System (LRAS3)
GENIIFUR
Project Manager
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

Longbow HELLFIRE
Longbow HELLFIRE Missile Systems
Product Manager
ATTN: SFAE–MSL-HD
Redstone Arsenal, AL 35898-5610

M113 Family of Vehicles (FOV)
U.S. Army Tank, Automotive and Armaments Command
Product Manager
ATTN: AMSTA–DSA-TA-CV
Warren, MI 48397-5000

Maneuver Control System (MCS)
MCS
Product Manager
ATTN: SFAE–C3S-AT
Fort Monmouth, NJ 07703-5405

Medium Extended Air Defense System (MEADS)
MEADS
Product Manager
P.O. Box 1500
ATTN: SFAE–AMD-SM
Huntsville, AL 35807-3801

MILSATCOM–EHF
MILSATCOM
Project Manager
ATTN: SFAE–C3S-MSA
Fort Monmouth, NJ 07703

MILSATCOM–UHF/SHF/TACSAT
MILSATCOM
Project Manager
ATTN: SFAE–C3S-MSA
Fort Monmouth, NJ 07703

Mortar (120 mm)
U.S. Armament Research, Development, and Engineering Center
Product Manager
ATTN: AMSTA–DSA-MO
Picatinny Arsenal, NJ 07806-5000

Multiple Launch Rocket System (MLRS)
MLRS
Project Manager
ATTN: SFAE–MSL-ML
Redstone Arsenal, AL 35898

Multi-Purpose Individual Munition/Short-Range Assault Weapon
MPIM/SRAW
Product Manager
ATTN: AMSAM–DSA-MP
Redstone Arsenal
Huntsville, AL 35898-5290

National Missile Defense (NMD)
NMD
Program Manager
ATTN: SFAE–AMD-NMD
P.O. Box 1500
Redstone Arsenal, AL 35807-3801

Night Vision (NV) Image Intensification (I2)
NV/RSTA
Project Manager
ATTN: SFAE–IEW&S-NV
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

Nuclear, Biological, Chemical Reconnaissance System (NBCRS)–Fox
NBC Defense Team
Project Manager
ATTN: AMSSB–PM-RNN
Aberdeen Proving Ground, MD 21010-5423

Objective Individual Combat Weapon (OICW)

Paladin
Paladin/FAASV
Product Manager
ATTN: AMSTA–DSA-PF
Picatinny Arsenal, NJ 07806-5000

Palletized Load System (PLS)
Heavy Tactical Vehicles
Project Manager
ATTN: AMSTA–DSA-HT
Warren, MI 48397-5000

Patriot
Project Manager
ATTN: SFAE–AMD-PA
P.O. Box 1500
Huntsville, AL 35807-3801

Profiler

Prophet
Signals Warfare
Project Manager
ATTN: SFAE–IEWS-SG
Fort Monmouth, NJ 07703-5303

Reverse Osmosis Water Purification Unit (ROWPU)
U.S. Army Tank–Automotive and Armaments Command Petroleum
Product Manager
ATTN: AMSTA–DSA-TA-PW
Building 210
Warren, MI 48397-5000

Second Generation Forward Looking Infrared (FLIR)
GEN II FLIR
Product Manager
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

Selectable Lightweight Attack Munition (SLAM)
Mines, Countermine and Demolitions
Project Manager
ATTN: AMSTA–DA-MC
Picatinny Arsenal, NJ 07806-5000

Sense and Destroy Armor (SADARM)
Artillery Munition Systems
Project Manager
ATTN: SFAE–GCCS-ARMS
Picatinny Arsenal, NJ 07806-5000

Sentinel
Sentinel
Product Manager
ATTN: AMSAM–DSA-SH-SN
Building 5308, Rm. 8230
Redstone Arsenal, AL 35898

Single Channel Ground and Airborne Radio System (SINCGARS)
SINCGARS
Product Manager
ATTN: SFAE–C3S-TRC
Fort Monmouth, NJ 07703

Small Arms (M4 Carbine, M16A4 Rifle, M24B Medium Machine Gun, MK19-3
Small Arms U.S. Army Armament Research, Development and Product Manager
ATTN: AMSTA–DSA-SA
Picatinny Arsenal, NJ 07806-5000

Smoke Generator (M56 Coyote)
Smoke/Obscurants
Product Manager
ATTN: AMSSB–PM-RSM
Aberdeen Proving Ground, MD 21010-5423

Soldier Support Systems
Soldier Support
Product Manager
ATTN: AMSS–PM-RSS (N)
Soldier Systems Center
Kansas Street
Natick, MA 01760-5057

Standard Army Management Information Systems (STAMIS)
STAMIS
Program Executive Office
ATTN: SFAE–PS
9350 Hall Road, Suite 142
Fort Belvoir, VA 22060

Standardized Integrated Command Post (SICPS)
ATCCS
Project Manager
ATTN: SFAE–C3S-AT
Fort Monmouth, NJ 07703

Stinger
U.S. Army Aviation and Missile Command
ATTN: AMSAM–DSA-SH
Redstone Arsenal, AL 35898-5000

Striker
Striker
Product Manager
ATTN: SFAE–GCSS-BV
Warren, MI 48397-5000

Suite of Integrated Radio Frequency Countermeasures (SIRFC)
Product Manager
ATTN: SFAE–AV-IRBldg. 5681
Wood Road
Redstone Arsenal, AL 35898

Tactical Endurance Synthetic Aperture Radar (TESAR)
TESAR
Product Manager
ATTN: SFAE–IEW&S-NV
Fort Monmouth, NJ 07703-5000

Tactical Exploitation System (TES)
U.S. Army Space Program Office Director
ATTN: SMDC-AO
77-1 Telegraph Road
Building 2592A
Alexandria, VA 22315

Tactical High Energy Laser (THEL)
U.S. Army Space and Missile Defense Command
Project Manager
P.O. Box 1500
Huntsville, AL 35807

Tactical High Speed Data Network (THSDN) (WRAP Candidate)
Warfighter Information Network (Terrestrial)
Project Manager
ATTN: SFAE–C3S-WIN
Building 744
Fort Monmouth, NJ 07703-5506

Tactical Operations Centers (TOCs)
Air Defense Command and Control Systems (ADCCS)
Project Manager
ATTN: SFAE–C3S-AD
Redstone Arsenal, AL 35898-5600

Tactical Quiet Generators (TQG)
Mobile Electric Power
Project Manager
7798 Cissna Road, Suite 200
Springfield, VA 22150

Tactical Simulation Interface Unit (TSIU) (WRAP Candidate)

Tactical Unmanned Aerial Vehicle (TUAV)
Joint Tactical Unmanned Aerial Vehicle
Project Manager
ATTN: PEO–CU-UAV
Redstone Arsenal, AL 35898

Tank Main Gun Ammunition
Tank Main Armament Systems
Project Manager
ATTN: SFAE–GCSS-TMA
Picatinny Arsenal, NJ 07806-5000

Theater High Altitude Area Defense System (THAAD)
Project Manager
ATTN: SFAE–AMD-THA
P.O. Box 1500
Huntsville, AL 35807-3801

Thermal Weapon Sight (TWS)
NV/RSTA
Project Manager
ATTN: SFAE–IEW&S-NV
10221 Burbeck Road, Suite 430
Fort Belvoir, VA 22060-5806

TOW Fire and Forget (F&F)

TOW Improved Target Acquisition System (ITAS)
ITAS
Product Manager
ATTN: SFAE–MSL-CC
Redstone Arsenal, AL 35898-5710

Ultra Lightweight Camouflage Net Systems (ULCANS)

Warfighter Information Network–Terrestrial (WIN-T) Switches
Warfighter Information Network–Terrestrial (WIN-T)
Project Manager
ATTN: SFAE–C3S-WIN
Building 744
Fort Monmouth, NJ 07703-5506

Warfighter Information Network–Terrestrial (WIN-T) Technology Insertion
Warfighter Information Network–Terrestrial
Project Manager
ATTN: SFAE–C3S-WIN
Building 744
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Wolverine
Wolverine
Product Manager
ATTN: AMSTA–DSA-CM
Warren, MI 48397-5000

XM 777 Joint Lightweight 155m Howitzer

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